

FINAL APPLICATION NARRATIVE
IN SUPPORT OF
DELAWARE RIVER BASIN COMMISSION
WITHDRAWAL AND DISCHARGE APPLICATIONS
FOR
PENNEAST PIPELINE PROJECT
FEBRUARY 2016

PREPARED FOR



PENNEAST PIPELINE COMPANY, LLC
ONE MERIDIAN BOULDEVARD, SUITE 2C01
WYOMISSING, PA 19610

PREPARED BY

AECOM
625 WEST RIDGE PIKE, SUITE E-100
CONSHOHOCKEN, PENNSYLVANIA 19428

Contents

Section	Page
1.0 INTRODUCTION.....	1
2.0 PROJECT DESCRIPTION	1
2.1 Anticipated Schedule.....	1
2.2 Permitting Information	2
2.3 Project Location and Characteristics	10
2.4 Facilities within the Delaware River Basin Area	10
2.5 Land Use Types Crossed within the Delaware River Basin Area.....	12
2.5.1 Total Impacts Resulting from Construction and Operation of the Project within the Delaware River Basin Area	15
2.5.2 Wetland Impacts within the Delaware River Basin.....	16
2.5.3 Waterbody Impacts within the Delaware River Basin.....	18
2.5.4 FEMA Flood Zones Crossed by the Project within the Delaware River Basin.....	21
3.0 WATER USE FOR CONSTRUCTION ACTIVITIES	26
3.1 Hydrostatic Testing Operations.....	35
3.1.1 Hydrostatic Testing Sources and Volumes	35
3.1.2 Disposal of Hydrostatic Test Water.....	37
3.2 Horizontal Directional Drill Activities	37
3.2.1 HDD Sources and Volumes.....	38
3.2.2 Disposal of HDD water	39
3.3 Dust Control	39
3.3.1 Dust Control Sources and Volumes.....	39
3.3.2 Disposal of Dust Control Water	40
4.0 WATER WITHDRAWAL AND DISCHARGE PLANS.....	40
4.1 Withdrawal and Intake Devices to be Used	40
4.1.1 Metering Plan	41
4.2 Best Management Practices for Discharge Activities	41
4.3 Invasive Species Management	41
5.0 STORM WATER MANAGEMENT	42
5.1 Best Management Practices and Erosion & Sediment Control Devices for Construction Activities.....	42
5.2 Right-of-Way Restoration and Off-Site Mitigation Plans.....	43
5.3 Spill Prevention, Control, and Countermeasure Plan.....	43
6.0 WATER QUALITY	43
6.1 State Permit Requirements and Authorizations for Withdrawal and Discharge Activities	43
6.2 Use of Chemicals or Additives for Hydrostatic Pressure Testing.....	44
6.3 Impacts to Benthic Communities	44
6.4 Thermal Impacts associated with Construction Activities	45
7.0 CONCLUSION	46
8.0 REFERENCES.....	48

Tables

- 2.2-1 Required Environmental Permits and Approvals for the Project
- 2.4-1 Pipeline Facilities within the Limits of the Delaware River Basin
- 2.4-2 Aboveground Facilities within the Limits of the Delaware River Basin
- 2.5-1 Land Use Acreage Affected by Construction and Operation of Project Pipeline Facilities - Delaware River Basin
- 2.5-2 Land Requirements for Pipeline Facilities within the Delaware River Basin
- 2.5-3 Summary of Wetlands Affected by Construction and Operation of the Project within the Delaware River Basin Area
- 2.5-4 Summary of Waterbodies Crossed by the Pipeline Facilities within the Delaware River Basin
- 2.5-5 Summary of FEMA Flood Zones Crossed by the Pipeline Facilities within the Delaware River Basin Area
- 2.5-6 National and State Non-Urban Recreational Areas Crossed by the PennEast Project
- 3.1-1 Water Withdrawal and Discharge Locations for Construction Activities Associated with the PennEast Project
- 3.1-2 Summary of Water Use Needs for the PennEast Project
- 3.2-1 Horizontal Directional Drill Locations for the PennEast Project

Appendices

Appendix A	Federal Energy Regulatory Commission Section 7(c) Application
Appendix B	Project Figures
Appendix C	Erosion and Sediment Control Plan
Appendix D	Wetlands Crossed by the PennEast Project within the Delaware River Basin
Appendix E	Waterbodies Crossed by the PennEast Project within the Delaware River Basin
Appendix F	Proposed Surface Water Intake Structures for the Project
Appendix G	Typical BMP Detail of Dewatering Structure
Appendix H	Spill Prevention, Control, and Countermeasure (SPCC) Plan and Unanticipated Discovery of Contamination Plan
Appendix I	Benthic Studies in Support of Natural Community Recovery Following Construction Activities

1.0 INTRODUCTION

PennEast Pipeline Company, LLC (PennEast) is applying for a Surface Water Withdrawal and Discharge Permit (see Section 1) from the Delaware River Basin Commission (DRBC) under Article 3.8 of the Delaware River Basin (DRB) Compact (U.S. Pub. L. 87-328, 107 Stat. 688, 27 September 1961). The purpose of this application is to request temporary water supply volumes to conduct hydrostatic testing and horizontal directional drill (HDD) withdrawal and discharge activities, as well as other ancillary functions (e.g., dust control) for the PennEast Pipeline Project (Project) within the drainage basin of the Delaware River. PennEast is requesting approval for a temporary withdrawal and discharge of approximately 45.260 million gallons (mg) of water from multiple sources to conduct HDD and hydrostatic testing activities, as well as other ancillary functions (e.g., dust control) within areas draining to Special Protection Waters (SPW) as defined under the DRBC Administrative Manual – Part III Water Quality Regulations (18 CFR PART 410.1) within the drainage basin of the Delaware River. Of that total, 4.661 mg will be supplied by other permitted uses in the basin. As such, the Project may require a one-time, temporary withdrawal of up to 40.599 mg from new surface water sources within the Delaware River Basin.

The objectives of this narrative are to:

- Provide background information for the proposed Project;
- Provide information about the proposed temporary withdrawal and discharge of water supply volumes; and
- Provide additional information regarding Federal, state, and other agency coordination and permitting efforts.

2.0 PROJECT DESCRIPTION

PennEast is proposing to install 114.6 miles of new natural gas transmission pipeline to convey approximately 1.1 million dekatherms per day (MMDth/d) of natural gas produced in the Marcellus Shale production region in northern Pennsylvania to growing natural gas markets in New Jersey, eastern and southeastern Pennsylvania and surrounding states. The pipeline design and installation have been reviewed by several regulatory agencies, and details pertaining to the status of the required federal, state, and local permits and approvals for the Project have been discussed in Section 2.2 of this narrative, along with Section 1.7 of Resource Report 1 (see Appendix A).

Following installation of the proposed pipeline system, a hydrostatic test of the new pipeline is required to verify system integrity. The proposed hydrostatic test, including the laterals, along with proposed HDD activities and ancillary functions (i.e., dust control) is anticipated to require the withdrawal of approximately 45.260 mg of water from new and existing water sources within the SPW drainage area of the Delaware River Basin. No portion of the Project will result in the transfer of water into or out of the Delaware River Basin. The majority of the water requested for the Project will remain clean and will be discharged back onto land within the Delaware River Basin. A small portion of the requested water supply volumes will be consumed by the Project via evaporation during dust suppression activities or through incorporation of the drilling fluids along the pipeline route during HDD operations.

2.1 Anticipated Schedule

As discussed in Section 1.5.1 of Resource Report 1 (see Appendix A), Construction of the Project will commence after right-of-way (ROW) and applicable regulatory permits and clearances have been acquired for the Project and upon receipt of a Notice to Proceed from the Federal Energy Regulatory

Commission (FERC). In PennEast's application to FERC, issuance of a Certificate of Public Convenience and Necessity for the Project has been requested by August 1, 2016.

Certain aspects of construction in compliance with timing restrictions, including winter tree clearing to avoid Indiana bat (*Myotis Sodalis*) and other threatened and endangered species breeding periods, compliance with the Migratory Bird Treaty Act (MBTA), installation of trenchless segments, and contractor yard preparation, are planned to begin late in the third quarter of 2016. The 2017 construction activities for the Mainline and facility scope of work are scheduled to commence in the spring of 2017, pending specific construction windows imposed on the Project. Winter tree clearing for the 2017 construction activities is scheduled to commence in October 2016, with the 2017 construction activities for the Mainline scheduled to commence in the spring of 2017.

2.2 Permitting Information

Construction, operation, and maintenance of the Project will be conducted in accordance with PennEast's specifications and applicable municipal, state and federal permit requirements. The environmental permits, licenses, approvals, and certificates that have been identified to date and will be applied for are identified in Table 2.2-1. A summary of the permits specific to the withdrawal and release of water supply volumes for the Project within the Delaware River Basin is as follows:

Pennsylvania Department of Environmental Protection (PADEP) - Bureau of Point and Non-Point Source Management

- Notice of Intent (NOI) for coverage under the Pennsylvania General Permit – 10 for Discharges from Hydrostatic Testing of Tanks and Pipelines (PAG-10)
 - Applications will be submitted in First Quarter of 2016.

New Jersey Department of Environmental Protection (NJDEP) – Bureau of Surface Water Permitting and Bureau of Water Allocations & Well Permitting

- Water Allocation Permit Application (BWA-001A) for surface water withdrawal activities
 - Application will be submitted (if applicable) following consultation with the NJDEP.
- Clean Water Assurance Certification Form (NJ0132993) filed under the Hydrostatic Test Water Discharges Surface Water Renewal Permit for the discharge of hydrostatic test waters
 - Application will be submitted following consultation with the NJDEP.

**Table 2.2-1
Required Environmental Permits and Approvals for the Project**

Agency	Permit/Approval	Status	Anticipated Filing/Receipt Dates
FEDERAL			
U.S. Army Corps of Engineers - Philadelphia and Baltimore Districts	Clean Water Act Section 404, Rivers and Harbors Act Section 10, and Title 33 Section 408 Approvals	Initial consultation letter sent 8/12/2014. Introduction and coordination meeting held 10/30/14. Updated route materials sent 7/24/15 and 10/01/15. Pre-application meetings held 7/13/2015 and 7/16/2015. Delineation Verifications commenced in Nov. 2015 and are ongoing.	Feb. 2016 Applications/ Nov.- Dec. 2016 Receipt
U.S. Fish and Wildlife Service - Pennsylvania	Endangered Species Act, Section 7 Consultation and Clearance	Initial consultation letter sent 8/12/2014. Introduction and coordination meeting held 10/29/14. Updated route materials sent 7/24/15 and 10/1/15. Rare, Threatened, and Endangered (RTE) species survey coordination meeting held 4/22/15. Species report submitted 10/7/15.	Oct. 2015 Consultation/ Nov.- Dec. 2016 Receipt
U.S. Fish and Wildlife Service - New Jersey	Endangered Species Act, Section 7 Consultation and Clearance	Initial consultation letter sent 8/12/2014. Consultation discussions ongoing. Updated route materials sent 7/24/15 and 10/1/15. RTE survey coordination meeting held 4/23/15. Species report submitted 10/7/15.	Oct. 2015 Consultation/ Nov.- Dec. 2016 Receipt
National Marine Fisheries Service (NMFS)	Endangered Species Act, Section 7 Consultation and Clearance	Initial consultation letter sent 8/12/2014. Response received stating that no threatened or endangered species under the jurisdiction of the NMFS are known to occur in the Project area, and no further consultation is necessary. Updated route materials sent 7/24/15 and 10/1/15. Follow-up consultation on 12/8/15 regarding in-work timing restriction for Delaware River. Consultations ongoing.	Aug. 2014 Consultation/ Nov.- Dec. 2016 Receipt

**Table 2.2-1
Required Environmental Permits and Approvals for the Project**

Agency	Permit/Approval	Status	Anticipated Filing/Receipt Dates
National Park Service (NPS)	NPS Consultation and Clearance for National Natural Landmarks, National Trails, and National Historic Sites	Initial consultation letter sent 8/12/2014. Introduction and coordination meeting with National Wild and Scenic Rivers Program managers held 10/1/14. Updated route materials sent 7/24/15 and 10/1/15. Held conference call on Appalachian Trail crossing on 8/11/15.	No Filing Necessary
National Resources Conservation Service (NRCS)	NRCS Consultation	Initial coordination meeting held 3/18/15. Joint agriculture community meeting held 6/2/15. Updated route materials sent 7/24/15.	No Filing Necessary

**Table 2.2-1
Required Environmental Permits and Approvals for the Project**

Agency	Permit/Approval	Status	Anticipated Filing/Receipt Dates
STATE - PENNSYLVANIA			
PADEP (Northeast and Southeast Regional Offices)	Water Obstruction and Encroachment Permits	Initial consultation letter sent 8/12/2014. Coordination meeting held 11/19/14. Updated route materials sent 7/24/15 and 10/1/15. Pre-application meetings held 7/13/15 and 12/17/15.	Feb. 2016 Applications/ Nov.-Dec. 2016 Receipt
	Submerged Lands License Agreements		
	Section 401 Water Quality Certification		
	Erosion and Sediment Control General Permit (ESCGP-2)		
	Hydrostatic Testing Discharge General Permits (PAG-10)		
	Plan Approval and Operating Permit for a Non-Major Source		
Pennsylvania Game Commission (PGC)	T&E Species Consultation and Clearance	Initial consultation letter sent 8/12/2014. Introduction and coordination meeting held 9/25/14. Special Use Permits for surveys on PGC lands issued 9/2014. Updated route materials sent 7/24/15 and 10/1/15. Appalachian Trail crossing meetings held 5/21/15 and 8/27/15. Species report submitted 10/7/15 and 11/10/15. Consultations ongoing.	Oct. 2015 Consultation/ Nov.-Dec. 2016 Receipt

**Table 2.2-1
Required Environmental Permits and Approvals for the Project**

Agency	Permit/Approval	Status	Anticipated Filing/Receipt Dates
Pennsylvania Fish and Boat Commission (PFBC)	T&E Species Consultation and Clearance	Initial consultation letter sent 8/12/2014. Introduction and coordination meetings held 11/4/14 and 11/24/14. Updated route materials sent 7/24/15 and 10/01/15. RTE species survey and land use consultations ongoing. Species reports submitted 10/7/15 and 11/10/15. PFBC T&E Consultation responses received 11/5/2015 and 12/10/15. Consultations ongoing.	Oct. 2015 Consultation and Jan. 2016 Applications/ Nov.- Dec. 2016 Receipt
	Permit for Use of Explosives in Commonwealth Waters		
	Aid to Navigation Plan Approval		
Pennsylvania Department of Conservation and Natural Resources (DCNR)	RTE Species Consultation and Clearance	Initial consultation letter sent 8/12/2014. Introduction and coordination meetings held 11/4/14 and 11/24/14. Updated route materials sent 7/24/15 and 10/1/15. Special Use Permits for surveys on state park lands issued 4/8/15. Species report submitted 10/7/15. DCNR response received 10/22/15. Consultations ongoing.	Oct. 2015 Consultation/ Nov.- Dec. 2016 Receipt
Pennsylvania Historical and Museum Commission (PHMC)	National Historic Preservation Act, Section 106 Consultation and Clearance	Initial consultation letter received 08/21/2014. Consultations ongoing. Updated route materials sent 7/24/15 and 10/1/15. Phase I Archeological Report and Historical Reconnaissance Report submitted 9/23/15. PHMC responses received 10/21/15 and 10/22/15. Consultations ongoing.	Sept. 2015 Consultation/ Nov.- Dec. 2016 Receipt

**Table 2.2-1
Required Environmental Permits and Approvals for the Project**

Agency	Permit/Approval	Status	Anticipated Filing/Receipt Dates
STATE – NEW JERSEY			
NJDEP, Division of Land Use Regulation	NJ Freshwater Wetlands Letter of Interpretations and Individual Permit, includes Federal wetlands certification NJ Flood Hazard Area Verifications and Individual Permit	Initial consultation letter sent 8/12/2014. Introduction and coordination meeting held 9/23/14. Interagency coordination meeting held 12/2/14. Updated route materials sent 7/24/15. Consultation meetings held 7/2/15, 7/30/15, 8/4/2015, 8/5/2015, 8/19/2015, 9/2/2015, 9/8/2015, 9/10/2015 and 9/16/2015.	Application process commencing Fall 2015
NJDEP, Green Acres Program	NJ Green Acres Minor/Major Diversion	Initial consultation letter sent 8/12/2014. Introduction and coordination meeting held 9/23/14. Interagency coordination meeting held 12/2/14. Updated route materials sent 7/24/15. Consultation meeting held 7/2/15.	Commencing Fall 2015
NJDEP, Division of Air Quality	Air Quality General Permits, including Federal Air Permits	Scheduled prior to construction.	Consultation Ongoing
NJDEP, Division of Water Resources	Discharge to Surface Water Permit Water Allocation Permit NJDEP General Permit No. 5G3 (NJ0088323) for Stormwater Discharge Associated with Construction Activity	Applicability will be determined as Project design advances.	Consultation Ongoing
New Jersey State Historic Preservation Office (NJSHPO)	National Historic Preservation Act, Section 106 Consultation and Clearance	Initial consultation letter sent 8/19/2014. Introduction and coordination meeting held 9/16/14. Interagency coordination meeting held 12/2/14. Updated route materials sent 7/24/15. Revised archaeological sensitivity model accepted 4/8/15.	Sept. 2015 Application/ Nov.- Dec. 2016 Receipt

**Table 2.2-1
Required Environmental Permits and Approvals for the Project**

Agency	Permit/Approval	Status	Anticipated Filing/Receipt Dates
NJ State Agriculture Development Committee	NJ Farmland Preservation Program Consultation	Introductory meeting held 9/12/14. Interagency coordination meeting held 12/2/14. Updated route materials sent 7/24/15. Joint agricultural community meeting held 6/2/15.	N/A
COUNTY			
Luzerne Conservation District	Erosion and Sediment Control General Permit (ESCGP-2) Technical Review	Initial consultation letter sent 8/21/2014. Pre-application meeting held 7/13/15. Additional pre-application meeting scheduled for 12/17/15. Updated route materials sent 7/24/15 and 10/1/15.	Feb. 2016 Application/ Nov.- Dec. 2016 Receipt
Carbon County Conservation District	Erosion and Sediment Control General Permit (ESCGP-2) Technical Review	Initial consultation letter sent 8/21/2014. Pre-application meeting held 7/13/15. Additional pre-application meeting scheduled for 12/17/15. Updated route materials sent 7/24/15 and 10/1/15.	Feb. 2016 Application/ Nov.- Dec. 2016 Receipt
Northampton County Conservation District	Erosion and Sediment Control General Permit (ESCGP-2) Technical Review	Initial consultation letter sent 8/21/2014. Pre-application meeting held 7/13/15. Additional pre-application meeting scheduled for 12/17/15. Updated route materials sent 7/24/15 and 10/1/15.	Feb. 2016 Application/ Nov.- Dec. 2016 Receipt
Bucks County Conservation District	Erosion and Sediment Control General Permit (ESCGP-2) Technical Review	Initial consultation letter sent 8/21/2014. Pre-application meeting held 7/13/15. Additional pre-application meeting scheduled for 12/17/15. Updated route materials sent 7/24/15 and 10/1/15.	Feb. 2016 Application/ Nov - Dec. 2016 Receipt
Hunterdon County Conservation District	Soil Erosion and Sediment Control (SESC) Plan Certification	Initial consultation letter sent 8/21/2014.	Consultation Ongoing
Mercer County Conservation District	Soil Erosion and Sediment Control (SESC) Plan Certification	Initial consultation letter sent 8/21/2014.	Consultation Ongoing

**Table 2.2-1
Required Environmental Permits and Approvals for the Project**

Agency	Permit/Approval	Status	Anticipated Filing/Receipt Dates
WATERSHED-SPECIFIC REGULATORY AUTHORITIES			
Delaware River Basin Commission (DRBC)	Water Withdrawal Approval and Project Review	Initial consultation letter sent 8/21/2014. Introduction and coordination meeting held 9/3/14. Updated route materials sent 7/24/15 and 10/1/15. Pre-application meetings held 7/13/15 and 12/2/15.	Feb. 2016 Application/ Mar. 2017 Receipt
Susquehanna River Basin Commission (SRBC)	Water Withdrawal Approval if more than 100,000 gallons per day averaged over 30 days	Initial consultation letter sent 8/21/2014. Introduction and coordination meeting held 11/6/14. Updated route materials sent 7/24/15 and 10/1/15.	Consultation Ongoing

2.3 Project Location and Characteristics

The proposed Project will entail the construction of approximately 114.6 miles of new 36-inch Mainline pipeline beginning at milepost (MP) 0.0, within the Susquehanna River Basin in Dallas Township, Luzerne County, Pennsylvania, extending to MP 114.2 within the Lower Hudson River Basin in Pennington, Mercer County, New Jersey. In addition to the Mainline route, PennEast has also proposed two (2) lateral pipeline routes in Pennsylvania and New Jersey consisting of the Hellertown and Lambertville Laterals; both laterals are located entirely within the Delaware River Basin. The Hellertown Lateral is a 2.1 mile-long 24-inch pipeline within Northampton County, Pennsylvania, and the Lambertville Lateral involves the construction of a 1.4-mile, 36-inch pipeline within Hunterdon County, New Jersey.

Construction of the Project will also involve the development of new aboveground facilities including a natural gas compressor station which has been identified as the Kidder Compressor Station, as well as multiple associated aboveground ancillary facilities (e.g., pipeline interconnects, Mainline valves (MLVs) and internal inspection launcher and receiver facilities). All ancillary facilities have been proposed within the permanent ROW of the new Mainline and lateral pipeline systems. The new Kidder Compressor Station facility has been proposed in the vicinity of MP 26.0 in Kidder Township, Carbon County, Pennsylvania, which is also located in the Delaware River Basin. A depiction of PennEast's proposed pipeline and aboveground facilities can be found on the Project figures included in Appendix B. Detailed information pertaining to the location and the anticipated impacts from construction and operation of the facilities proposed for the Project can be located in Section 1.2 of Resource Report 1 (see Appendix A).

2.4 Facilities within the Delaware River Basin Area

PennEast's Project facilities within the Delaware River Basin area include the development of the Mainline pipeline beginning at MP 14.4, near Bald Mountain in Luzerne County Pennsylvania, and continuing to MP 111.9, in Pennington, Mercer County, New Jersey (see Appendix B). Construction of the Kidder Compressor Station at MP 26.0 in Carbon County, Pennsylvania, as well as the Hellertown and Lambertville Laterals proposed in Northampton County, Pennsylvania and Hunterdon County New Jersey, respectively (see Appendix B).

Tables 2.4-1 and 2.4-2 provide a summary of the proposed Project facilities by MP that are located within the Delaware River Basin. Figures depicting the location of the proposed pipeline and aboveground facilities within the limits of the Delaware River Basin can be found in Appendix B1.

Table 2.4-1
Pipeline Facilities within the Limits of the Delaware River Basin

Facility	Pipeline Diameter and Type	Approx. Length ^a (miles)	Begin MP ^b	End MP ^a	State	County
PennEast Mainline Route Pipeline	36-inch new pipeline	97.5	14.4	111.9	PA, NJ	Luzerne, Carbon, Northampton, Bucks, Hunterdon, Mercer
Hellertown Lateral	24-inch new pipeline	2.1	71.6	HL-2.1	PA	Northampton
Lambertville Lateral	36-inch new pipeline	1.4	100.6	LL-1.4	NJ	Hunterdon

^a MPs shown are based on alignment sheet information. Approximate mileage may be slightly off due to rounding

^b Beginning MPs are on the Mainline

Table 2.4-2
Aboveground Facilities within the Limits of the Delaware River Basin

Facility Location	Type	New/ Modified	MP ^a	Municipality/ State/ County
PennEast Mainline	Mainline Block Valve 2	New	19.6	Bear Creek Twp/ Luzerne County/ Pennsylvania
	Kidder Compressor Station	New	26.6	Kidder Twp/ Carbon County/ Pennsylvania
	Mainline Block Valve 3	New	32.2	Kidder Twp/ Carbon County/ Pennsylvania
	Mainline Block Valve 4	New	46.1	Towamensing Twp/ Carbon County/ Pennsylvania
	Blue Mountain Interconnect (UGI Central Penn Gas, Inc.)/Mainline Block Valve 5	New	51.0	Lower Towamensing Twp/ Carbon County/ Pennsylvania
	Mainline Block Valve 6	New	56.0	Moore Twp/ Northampton County/ Pennsylvania
	Mainline Block Valve 7	New	62.2	Upper Nazareth Twp/ Northampton County/ Pennsylvania

Table 2.4-2
Aboveground Facilities within the Limits of the Delaware River Basin

Facility Location	Type	New/ Modified	MP ^a	Municipality/ State/ County
	Hellertown Launcher & Mainline Launcher/Receiver/Mainline Block Valve 8	New	71.6	Lower Saucon Twp/ Northampton County/ Pennsylvania
	Mainline Block Valve 9	New	79.5	Holland Twp/ Hunterdon County/ New Jersey
	Mainline Block Valve 10	New	90.1	Kingwood Twp/ Hunterdon County/ New Jersey
Hellertown Lateral	TCO (Columbia Gas Transmission, LLC) and UGI- LEH (UGI Utilities, Inc.) Interconnects	New	HL-2.1	Lower Saucon Twp/ Northampton County/ Pennsylvania
Lambertville Lateral	Lambertville Launcher Site/Mainline Block Valve 11	New	100.6/ LL-0.0	West Amwell Twp/ Hunterdon County/ New Jersey
	Algonquin (Algonquin Gas Transmission, LLC) and TETCO (Texas Eastern Transmission, LP) Interconnects	New	LL-1.4	West Amwell Twp/ Hunterdon County/ New Jersey

^a MPs shown are based on alignment sheet information and are based on pipeline centerline. Approximate mileage may be slightly off due to rounding

2.5 Land Use Types Crossed within the Delaware River Basin Area

Construction and operation of the Project's facilities will result in both temporary and permanent alterations to land use and land cover types within the Delaware River Basin. Direct disturbances during construction and operation of the Project will be minimized through implementation of PennEast's Erosion and Sediment Control Plan (E&SCP) (see Appendix C). The E&SCP contains industry-specific best management practices (BMPs) for standard cross-county pipeline installation in typical areas, as well as location-specific specialized BMPs for the crossing of sensitive areas such as wetlands, waterbodies, steep terrain and agricultural locations. A summary of the land use types crossed by the Project within the Delaware River Basin can be found in Table 2.5-1.

Table 2.5-1
Land Use Acreage Affected by Construction and Operation of Project Pipeline Facilities - Delaware River Basin

State/Facility/County	Municipality	Begin MP ¹	End MP ¹	Begin MP ²	End MP ²	Agricultural ³		Forest/ Woodland ⁴		Open Land ⁵		Residential ⁶		Industrial/ Commercial ⁷		Open Water ⁸		Total ¹⁰	
						Temp.	Perm.	Temp.	Perm. ⁹	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.
Pennsylvania																			
PennEast Mainline Route Pipeline																			
Luzerne	Bear Creek Twp	14.2	23.0	14.4	23.2	0.0	0.0	59.2	51.2	2.8	0.6	0.5	0.0	0.0	0.1	0.2	0.3	62.7	52.2
	Subtotal					0.0	0.0	59.2	51.2	2.8	0.6	0.5	0.0	0.0	0.1	0.2	0.3	62.7	52.2
Carbon	Kidder Twp	23.0	23.2	22.8	23.4	1.2	0.9	61.1	49.6	10.1	8.5	1.1	0.8	0.5	0.6	0.3	0.3	74.3	60.8
Carbon	Penn Forest Twp	33.1	40.6	33.3	40.8	0.0	0.0	50.9	34.6	8.5	10.6	0.3	0.4	0.1	0.3	0.0	0.0	59.8	45.9
Carbon	Towamensing Twp	40.6	47.1	40.8	47.3	18.0	8.6	32.1	25.3	4.2	3.2	1.2	0.4	0.9	0.9	0.0	0.6	56.4	38.9
Carbon	Lower Towamensing Twp	47.1	51.1	47.3	51.3	5.4	2.8	18.1	14.4	0.4	0.3	0.0	0.0	10.3	6.9	0.0	0.1	34.2	24.5
	Subtotal					24.7	12.3	162.1	123.8	23.2	22.7	2.6	1.7	11.9	8.6	0.3	1.0	224.8	170.1
Northampton	Lehigh Twp	51.1	53.5	51.3	53.7	0.0	0.0	28.0	14.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.0	14.3
Northampton	Moore Twp	53.5	60.3	53.7	60.5	46.4	25.7	22.9	13.6	0.2	0.1	4.2	1.4	1.6	0.7	0.0	0.0	75.3	41.5
Northampton	East Allen Twp	60.3	61.2	60.5	61.4	6.6	3.9	1.5	1.0	0.0	0.0	0.4	0.1	0.0	0.1	0.0	0.0	8.5	5.0
Northampton	Upper Nazareth Twp	61.2	63.9	61.4	64.1	21.5	12.0	4.4	2.1	1.1	0.6	2.1	1.0	2.1	1.0	0.0	0.0	31.1	16.7
Northampton	Lower Nazareth Twp	63.9	67.1	64.1	67.3	25.2	15.6	0.9	0.3	1.2	1.1	3.6	1.7	0.1	0.2	0.0	0.0	31.0	19.1
Northampton	Bethlehem Twp	67.1	70.9	67.3	71.1	17.4	8.5	2.7	2.6	8.6	4.9	1.0	0.8	7.9	6.5	0.0	0.0	37.5	23.3
Northampton	Easton City	70.9	71.1	71.1	71.3	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.9
Northampton	Lower Saucon Twp	71.1	72.4	71.3	72.6	3.1	2.1	2.7	3.0	0.7	1.2	0.4	0.3	0.1	0.7	0.0	0.2	6.9	7.6
Northampton	Williams Twp	72.4	75.9	72.6	76.1	11.2	6.4	14.3	11.6	3.1	2.1	1.5	0.9	0.1	0.2	0.0	0.0	30.3	21.2
	Subtotal					131.4	74.2	77.3	49.1	14.9	10.0	13.1	6.3	11.9	9.5	0.0	0.5	248.6	149.6
Bucks	Durham Twp	75.9	77.7	76.1	77.9	13.0	6.8	2.4	1.6	0.1	0.2	0.2	0.2	0.1	0.2	0.0	0.3	15.8	9.2
Bucks	Riegelsville Boro	76.7	76.9	76.9	77.1	2.4	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	1.5
	Subtotal					15.5	8.2	2.4	1.6	0.1	0.2	0.2	0.2	0.1	0.2	0.0	0.3	18.2	10.6
Hellertown 24-inch Lateral																			
Northampton	Lower Saucon Twp	0.0	2.1	N/A	N/A	5.0	3.6	9.5	6.4	2.2	1.9	0.7	0.4	0.1	0.2	0.0	0.0	17.6	12.5
	Subtotal					5.0	3.6	9.5	6.4	2.2	1.9	0.7	0.4	0.1	0.2	0.0	0.0	17.6	12.5
New Jersey																			
PennEast Mainline Route Pipeline																			
Hunterdon	Holland Twp	77.7	85.6	77.9	85.5	36.5	20.8	28.5	24.1	4.8	2.9	1.4	0.5	0.7	0.8	0.0	0.3	71.9	49.3
Hunterdon	Alexandria Twp	85.6	87.7	85.5	86.9	16.3	9.4	8.7	7.2	2.2	1.3	0.1	0.1	0.1	0.1	0.0	0.1	27.3	18.1
Hunterdon	Kingwood Twp	87.7	94.4	86.9	93.9	24.1	14.0	19.9	20.8	1.6	0.9	1.7	1.1	0.1	2.2	0.0	0.2	47.3	39.2
Hunterdon	Delaware Twp	94.4	100.3	93.9	99.8	26.5	17.3	23.3	15.7	1.5	0.5	2.3	1.3	0.2	0.4	0.0	0.1	53.8	35.4
Hunterdon	West Amwell Twp	100.3	104.4	99.8	103.9	17.3	9.4	19.9	12.1	4.3	3.0	0.4	0.0	0.3	0.5	0.0	0.0	42.2	25.0
	Subtotal					120.6	70.9	100.2	79.9	14.4	8.6	5.9	2.9	1.3	4.0	0.1	0.6	242.5	167.0
Mercer	Hopewell Twp	104.4	112.4	103.9	111.9	27.5	16.9	33.5	23.3	4.7	2.9	1.8	0.7	0.2	1.3	0.1	0.4	67.6	45.6
	Subtotal					27.5	16.9	33.5	23.3	4.7	2.9	1.8	0.7	0.2	1.3	0.1	0.4	67.6	45.6
Lambertville 36-inch Lateral																			
Hunterdon	West Amwell Twp	0.0	1.4	N/A	N/A	5.0	3.1	7.5	5.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	12.8	8.3

Table 2.5-1
Land Use Acreage Affected by Construction and Operation of Project Pipeline Facilities - Delaware River Basin

State/Facility/County	Municipality	Begin MP ¹	End MP ¹	Begin MP ²	End MP ²	Agricultural ³		Forest/ Woodland ⁴		Open Land ⁵		Residential ⁶		Industrial/ Commercial ⁷		Open Water ⁸		Total ¹⁰	
						Temp.	Perm.	Temp.	Perm. ⁹	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.
	Subtotal					5.0	3.1	7.5	5.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	12.8	8.3
	Project Total					329.7	189.1	451.7	340.4	62.4	47.0	24.8	12.3	25.5	23.9	0.8	3.1	894.9	615.9

1. Milepost values reflective of restationing to include route variations implemented since September FERC submission.
2. Milepost values calculated using station equations to relate current route to the route at the time of the September FERC submission.
3. Agricultural Land - Active cropland, pasture, orchards, vineyards, and/or hay fields;
4. Forest And Woodland - Tracts of upland or wetland forest or woodland that would be removed for the construction row or extra work or staging areas;
5. Open Land - Non-forested lands, herbaceous and scrub-shrub wetlands, and maintained utility row;
6. Residential Land - Residential yards, residential subdivisions, and planned new residential developments;
7. Industrial Or Commercial Land - Electric power or gas utility stations, manufacturing or industrial plants, landfills, mines, quarries, commercial or retail facilities, and roads;
8. Open Water – Water crossings greater than 100 feet.
9. Permanent impacts to forest/woodland were calculated for the entire 50-foot permanent ROW, however, only the management of the 30-foot wide cleared permanent ROW in upland forests and 10-foot wide cleared operational ROW in wetlands will require the permanent removal of trees in these forested areas.
10. Total temporary impacts include locations within 50-foot temporary workspace areas (TWS) and where applicable, workspace locations within additional temporary workspace areas (ATWS). Total permanent impacts include locations within the 50-foot permanent ROW easement.

2.5.1 Total Impacts Resulting from Construction and Operation of the Project within the Delaware River Basin Area

Total impacts resulting from construction of the Project within the Delaware River Basin will result in approximately 1903.7 acres of temporary disturbances associated with installation of the pipeline and aboveground facilities. Operation of the PennEast Project will account for approximately 662.40 acres of permanent disturbances associated with maintenance of the pipeline ROW and operation of the aboveground facilities. As discussed in Section 2.4, the proposed Project facilities within the Delaware River Basin will consist of approximately 97.5 miles of new 36-inch diameter Mainline pipeline, 2.1 miles of new 24-inch diameter Hellertown lateral pipeline, 1.4-miles of the new 36-inch diameter Lambertville lateral pipeline, the new Kidder Compressor Station, and various pipeline support facilities including interconnects, internal inspection launchers/receivers, MLVs, access roads and contractor yard facilities. Table 2.5-2 provides a summary of impacts within the Delaware River Basin depicted by facility type for construction and operation of the Project.

Table 2.5-2
Land Requirements for Pipeline Facilities within the Delaware River Basin¹

River Basin	Approx. Length	Temporary Workspace for Cons. (acres)	Additional Temporary Workspace for Cons. (acres)	Permanent Easement for Construction and Operation (acres)			Total Workspace for Construction (acres)
				Existing ²	Partially Existing	New	
Pipeline							
Upper Delaware	101.9 (mi)/3	545.5	349.3	0.0	0.0	615.8	1510.6
Access Roads ³							
Upper Delaware	22.1 (mi)/85	77.9	0.0	0.0	0.0	5.8	83.8
Pipeyards							
Upper Delaware	231.0 (ac)/6	0.0	231.0	0.0	0.0	0.0	231.0
Above Ground Facilities ⁴							
Upper Delaware	42.3 (ac)/14	1.1	0.5	0.0	0.0	40.8	42.3
Staging Areas							
Upper Delaware	36.0 (ac) /7	0.0	36.0	0.0	0.0	0.0	36.0
Total Project							
Upper Delaware	124(mi)/309.3 (ac) ⁵	624.5	616.7	0.0	0.0	662.4	1903.7

1. The totals shown on this table may not equal the sum of addends due to rounding.

2. Only includes existing permanent 50 foot ROW within limits of construction.

3. Estimated Temporary Workspace for Construction includes access roads (new and existing).

4. This table does not specify valves and launcher/receivers that will be constructed on the pipeline segments since the land requirements for these facilities are within the land requirements for the pipeline segments.

5. Mileage of Pipeline and Access Roads, Acreage of Pipeyards, Staging Areas, and Above ground facilities.

Typical construction and operation ROW widths for new pipeline along the PennEast Mainline pipeline and laterals are shown in Appendix C of this application. The standard construction ROW width for Project areas will be 100 feet wide consisting of new 50-foot permanent easement plus an average temporary workspace of 50 feet. In accordance with FERC guidelines, PennEast will limit the typical width of the construction ROW to 75 feet across wetlands and waterbodies, unless a variance is requested at specific crossings, and in wetlands would maintain only a 10 foot-wide corridor of the new 50-foot permanent easement centered on the pipeline for operational purposes.

2.5.2 Wetland Impacts within the Delaware River Basin

Wetlands crossed by the Project were identified using site-specific field delineation results where access was available, and estimation of wetland boundaries using United State Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping in Pennsylvania, and NJDEP Wetland Mapping for Hunterdon and Mercer Counties (NJDEP, 1986) for areas where access has yet to be provided.

PennEast conducted wetland delineations in the field in accordance with the U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual (Environmental Laboratory, 1987) and the regional USACE supplements, as applicable. Additionally, wetlands within the state of New Jersey were delineated using the 1989 Federal Manual for Identifying and Delineating Jurisdictional Wetlands (USFWS, 1989) as required by N.J.A.C. 7:7A (NJDEP, 2009). The USFWS wetland classification system described by Cowardin et al. (1979) was used to classify the wetlands that will be affected by the Project. The wetlands in the Project area were identified as:

- Palustrine Emergent Wetlands (PEM)
- Palustrine Scrub-Shrub Wetlands (PSS)
- Palustrine Forested Wetlands (PFO)
- Vernal Pools
- Agricultural wetlands (MODAg);
- Palustrine open water (POW)
- Lawns, stormwater management areas (MODL)

Table 2.5-3 provides a summary of wetland classifications affected by construction and operation of the Project by facility type within the Delaware River Basin and detailed tables accounting for impacts and listing individual wetlands crossed by the Project can be found within Appendix D. All impacts to wetlands impacted by construction of the Project will be submitted to the USACE, PADEP, and NJDEP as part of the Clean Water Act (CWA) (33 U.S.C. §1251 et seq. [1972]) Section 401 and Section 404 permit review process. Mapping depicting the location of the Project facilities as well as the wetlands crossed by the Project can be found in Appendix B.

Table 2.5-3
Summary of Wetlands Affected by Construction and
Operation of the Project within the Delaware River Basin Area

Facility	Cowardin Classification (PA)/NJDEP Classification	Length Crossed (feet)	Wetland Area within the Temporary Workspace (acre) ¹	Wetland Area within the Permanent ROW (acre)
PennEast Mainline – Pennsylvania²				
	PEM	4,654	2.86	1.59
	PFO	11,517	17.2	10.8
	PSS	4,309	6.39	3.65
	PUB	88	0.00	0.00
	Vernal Pools	92	0.12	0.10
Hellertown Lateral - Pennsylvania				
	(None)	0	0	0
PennEast Mainline – New Jersey²				
	PEM	603	1.28	0.70
	PFO	8118	4.17	9.13
	PSS	1186	0.55	1.38
	PUB	0	0.00	0.00
	MODAg	4663	6.34	5.13
	MODL	288	0.24	0.56
Lambertville Lateral – New Jersey				
	(None)	0	0	0

Notes:

¹The Kidder Compressor Station is included in the Construction and Operation Acreage.

² Access roads are included in Mainline pipeline Construction and Operation Acreage.

2.5.2.1 Construction Techniques and Best Management Practices for Wetland Crossings

PennEast has routed the proposed pipeline facilities and work areas to avoid and minimize effects on wetlands to the greatest extent practicable while maintaining engineering standards and safety. The routing process has allowed PennEast to identify a constructible pipeline alignment that will minimize disturbances on the environment while maintaining engineering standards and safety. Construction activities that could affect wetland vegetation, soils, and hydrology include clearing, use of heavy equipment that could cause soil mixing and compaction, trenching, fuel handling, and backfilling.

Impacts on wetlands during Project construction will include disturbance of soils and hydrology, and removal of vegetation. To minimize impacts on wetlands, PennEast will implement specialized construction methods as described in the E&SCP (see Appendix C).

Additionally, PennEast will comply with any mitigation requirements and permit conditions in its Clean Water Act Section 404 permits and Section 401 certifications.

The standard crossing method on wetlands will be via open trench. PennEast will minimize the length of time that topsoil is segregated and the trench is open to the extent possible. In accordance with FERC guidelines, PennEast proposes to use typical wetland crossing techniques including “push-pull” and “float” techniques for crossing wetlands when conditions permit. In addition, construction activities at wetland crossings will be performed in accordance with applicable regulatory requirements. PennEast is currently developing specific disturbances and proposed mitigation measures in consultation with the USACE and state agencies.

To minimize the potential for adverse effects to wetlands, PennEast will implement the following BMPs outlined in the E&SCP (see Appendix C) when conducting pipeline installation activities:

- PennEast will minimize vegetation clearing where feasible and stumps that do not interfere with travel or installation of the pipeline will be left in place to allow for re-sprouting following construction and restoration;
- PennEast will use construction mats in all wetlands to minimize impacts to the soil profile and reduce compaction in the travel lane;
- The excavation procedures used to cross unsaturated wetlands will be similar to those used in uplands;
- PennEast will segregate topsoil from the area disturbed by trenching, except in areas where standing water is present or soils are saturated;
- PennEast will install temporary trench plugs at the edges of wetlands, as necessary, to prevent the flow of upland sediments or other potential pollutants into wetlands during construction;
- PennEast will install permanent trench plugs at the edges of wetlands before the trench is backfilled to restore hydrology to preconstruction conditions;
- PennEast will install erosion control devices across and along the edge of the construction ROW, where indicated in the approved E&SCP (see Appendix C) and wherever necessary, to minimize the flow of sediment into wetlands; and
- PennEast will maintain a minimum 100-foot buffer from wetlands to refuel vehicles, store or transfer liquid hazardous materials, and field coat pipeline segments with concrete, unless otherwise approved by the Environmental Inspector (EI) and secondary containment is implemented.

2.5.3 Waterbody Impacts within the Delaware River Basin

Surface water resources identified in the general Project area include rivers, streams, associated tributaries, ponds, lakes, and catchment basins. To define the surface water resources intersected by the Project, PennEast used data from field survey results, the National Hydrography Dataset (NHD), NJDEP, Pennsylvania Department of Conservation and Natural Resources (PADCNR), Natural Resources Conservation Service (NRCS) county soils surveys, watershed data from United States Geological Survey (USGS), and aerial photography. PennEast identified these surface waterbodies during field surveys conducted between September 2014 and August 2015. NHD data was used where field surveys have not yet been performed. Table 2.5-4 provides a summary of all waterbody crossings, by facility and flow type within the Delaware River Basin. A complete list of all individual waterbodies crossed by the Project can be found within Appendix E. All impacts to waterbodies impacted by construction of the Project will be submitted to the USACE, PADEP, and NJDEP as part

of the CWA (33 U.S.C. §1251 et seq. [1972]) Section 401 and Section 404 permit review process. Mapping depicting the location of the Project facilities as well as the waterbodies crossed by the Project can be found in Appendix B.

Table 2.5-4
Summary of Waterbodies Crossed by the
Pipeline Facilities within the Delaware River Basin¹

Facility	Perennial Waterbody Crossing	Intermittent Waterbody Crossing	Ephemeral Waterbody Crossing ⁴	Open Water ²	Total
Pennsylvania					
PennEast Mainline ³	67	29	22	2	120
Hellertown Lateral	1	0	0	0	1
New Jersey					
PennEast Mainline	70	6	7	2	85
Lambertville Lateral	3	0	0	0	3
Project Total	141	35	29	4	209

¹Waterbody type for non-surveyed waterbodies was determined using NHD data

²Open water consists of waterbody (ponds, lakes, and rivers) over 100 feet wide or crossings greater than 100 feet wide.

³ The Kidder Compressor Station is included in the PennEast Mainline Facility totals.

⁴Ditches identified within the Project Area were included as ephemeral waterbody crossings.

For delineated streams, perennial/intermittent/ephemeral determinations were made based on channel definition, e.g., having a defined bed and bank per PA Code Chapter 93 (PA Code, 2014), and, as directed by PADEP (Mackowski, personal comm. 2012), by determination of stream flow using geomorphic, hydrological and biological indicators, utilizing the North Carolina Division of Water Quality (2005) identification methods as guidelines. For NHD waterbodies, perennial/ intermittent/ ephemeral designations were assigned in the NHD data layer. Note, due to state boundary lines the Delaware River is noted on both Table 2A-1 and Table 2A-2; it is counted once in PA on Table 2.3.2 for clarity purposes.

2.5.3.1 Waterbody Crossing Methods Proposed for the Project

PennEast has designed the Project to avoid or minimize impacts to resources wherever possible as discussed in Resource Reports 1 and 10 (see Appendix B). The Project has been co-located within, or parallel to, existing, previously disturbed, and maintained ROWs to the extent practicable. Stream crossing methods will be determined by individual stream conditions during final engineering design. The E&SCP (Appendix C) will be followed for both standard and special construction stream crossings areas. The procedures outlined in the E&SCP will minimize introduction of water pollutants into waterbodies and minimize impacts on aquatic resources. Impacts from construction-related sedimentation and turbidity will be limited to short-term, temporary disturbances by following the BMPs detailed in the Project-specific E&SCP. PennEast evaluated dry crossing methods for each watercourse crossing, including conventional open cut and trenchless techniques which are discussed in detail in the following sections.

Dam-and-Pump Crossing

The dam and pump crossing method involves constructing temporary dams upstream and downstream of the proposed crossing site while using a high capacity pump to divert water from the upstream side around the construction area to the downstream side (see E&SCP located in Appendix C).

Once restoration of the streambed is complete, the dams are removed and normal flow is re-established in the stream. For further details, see Section 1.5 of Resource Report 1 (see Appendix A).

Flume Crossing

The flume crossing method involves diverting the flow of the stream across the construction site through one or more flume pipes placed in the stream (see E&SCP located in Appendix C). If trench dewatering is necessary near waterbodies, the trench water may be discharged into an energy dissipation/sediment filtration device, such as geotextile filter bag or straw bale structure, away from the water's edge to prevent heavily silt-laden water from flowing into the waterbody. For further details, see Section 1.5 of Resource Report 1 (see Appendix A).

Horizontal Directional Drill (HDD)

HDD is the proposed method to cross major waterbodies and those waterbodies, which may support certain threatened and/or endangered species. Section 1.5 of Resource Report 1 (see Appendix A) provides details of the methods used for HDD crossings

Conventional Bore

PennEast will evaluate the need to use bore technology on a case-by-case basis. Section 1.5 of Resource Report 1 (see Appendix A) provides details of the methods used in conventional bore crossings.

2.5.3.2 Best Management Practices for Waterbody Crossings

PennEast selected the proposed pipeline route to avoid and minimize effects to waterbodies to the greatest extent practicable while maintaining the economic and safety standards of the Project. To minimize the potential for adverse effects to waterbodies, PennEast will implement the following BMPs outlined in the E&SCP (see Appendix C) when conducting pipeline installation activities:

- PennEast proposes to cross all waterbodies with discernible flow at the time of construction with a dry-crossing technique, except where specific conditions render a dry crossing infeasible;
- PennEast will install erosion control devices across and along the edge of the construction ROW, where indicated on the approved E&SCP and wherever necessary, to minimize the flow of sediment into waterbodies;
- PennEast will construct a temporary equipment bridge over each stream to minimize direct impacts from equipment travel;
- PennEast will minimize waterbody impacts using the bypass and flumed crossing techniques, which will prevent stream flow over an open trench;
- Stream flow will be restored after the banks have been temporarily stabilized;
- Across minor waterbodies, or those less than 10 feet wide, PennEast will install the pipe and restore the stream banks within 24 hours of trenching;
- For intermediate waterbodies (those streams between 10 feet and 100 feet wide), PennEast will construct the crossing within 48 hours;
- PennEast will install temporary trench plugs at the edges of waterbodies to prevent the flow of upland sediments or other potential pollutants into waterbodies during construction;

- To protect trout populations, PennEast will complete in-stream construction activities in accordance with the Pennsylvania and New Jersey allowable work windows for trout stocked streams and wild trout streams (see Resource Report 3 [Appendix A]);
- PennEast will install permanent trench plugs at the edges of waterbodies before the trench is backfilled to restore the hydrology to preconstruction conditions;
- Erosion control fabric will be installed within 50 feet of each waterbody to help stabilize the soil until permanent vegetative cover is achieved; and
- PennEast will maintain a minimum 100-foot buffer from waterbodies to refuel vehicles, store or transfer liquid hazardous materials, and field coat pipeline segments with concrete, unless otherwise approved by the EI and secondary containment is implemented.

2.5.4 FEMA Flood Zones Crossed by the Project within the Delaware River Basin

PennEast assessed the Flood Insurance Rate Maps issued by the Federal Emergency Management Agency (FEMA) to identify crossings of areas subject to flooding and high-volume flows (identified as Special Flood Hazard Areas [SFHA]). FEMA SFHAs are areas located within the 100-year floodplain. PennEast will continue to consult with federal, state, and local agencies to identify any other areas where flooding is a concern that may not be currently mapped by FEMA. Project figures contained within Appendix B4 show the FEMA 100-year floodplains crossed by the pipeline facilities within the limits of the Delaware River Basin and Table 2.5-5 provides a summary of the FEMA Flood Zones crossed by the pipeline facilities within the Delaware River Basin. Currently there are no proposed aboveground facilities or permanent access roads located within a designated SFHA.

Table 2.5-5
Summary of FEMA Flood Zones Crossed by the Pipeline
Facilities within the Delaware River Basin Area

Facility	FEMA Special Flood Hazard Areas		
	Linear Miles	Acreage within Temporary Workspace	Acreage within Permanent ROW ¹
Pennsylvania			
PennEast Mainline	2.6	19.6	10.2
Hellertown Lateral	0.0	0.0	0.0
New Jersey			
PennEast Mainline	0.8	7.0	9.9
Lambertville Lateral	0.0	0.0	0.0

¹ Floodplain impacts within the permanent ROW will be temporary

PennEast will implement BMPs applicable to floodplains including the control of erosion and sedimentation through installation of structural erosion and sedimentation facilities within and at the limits of the Project workspace. BMPs have been designed in accordance with Pennsylvania and New Jersey erosion control standards, including specifications for flooding frequency and volume. Additionally, the amount of vegetation cleared during construction will be limited to the removal of the minimum amount necessary for safe construction. PennEast will make every effort to expedite construction when working in floodway locations and will remove equipment and construction materials immediately following restoration of the workspace. During construction, PennEast will

monitor the local weather forecast and waterbody flow conditions and will implement the necessary measures such as the removal or securing of construction materials or equipment in the event a high-water event is anticipated.

PennEast will utilize secondary containment when operating pumps in floodway locations and hazardous materials, including chemicals, fuels, and lubricating oils, will not be stored within 100 feet of a waterbody boundary.

PennEast will restore and revegetate temporary workspace areas to minimize or avoid permanent impacts on vegetated floodway areas. Restoration and revegetation will comply with state and federal regulations and monitoring requirements. The construction workspace will be restored to preconstruction contours after construction and is not anticipated to result in increased flood elevations or encroachment within floodways.

To protect the integrity of the pipeline during flood events, the Project facilities have been designed, and will be constructed, tested, operated, and maintained to conform with applicable federal, state, and local requirements, including United States Department of Transportation (USDOT) regulations at 49 CFR Part 192, "Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards" and Commission regulations at 18 CFR Section 380.15, "Siting and Maintenance Requirements." The pipeline system will include many pipeline design and equipment features, in addition to routine inspection and maintenance programs, to increase the overall safety of the system and protect the public from any system failures due to natural catastrophes, such as severe flooding. Some of the measures include, but are not limited to, coating the pipeline with concrete to prevent it from floating in specific wetland and waterbody locations and extending the minimum cover depth of five (5) feet at waterbody crossing locations.

2.5.4.1 DRBC Uses by Special Permit within the Floodway and Flood Fringe

As described under Section 6.3.4 A (7) and B.(4) (*Uses by Special Permit within the Floodway and Flood Fringe*) of the DRBC's Administrative Manual – Part III Basin Regulations and Flood Plain Regulations (Flood Plain Regulations), Effective January 1, 1977, the installation of railroads, streets, bridges, and utility transmission lines and pipelines can be authorized under a special permit by the DRBC providing the conditions contained within Section 6.4.2 of the Flood Plain Regulations can be adhered to. These conditions consist of the following:

A special permit may be granted, or granted on stated conditions, provided:

A. There is a clear balance in favor of the public interest in terms of the following environmental criteria:

- *The importance of a facility to the community.*

As detailed in Section 1.1 of Resource Report 1 (Appendix A), the Project has been designed to provide a long-term solution to bring the lowest cost natural gas available in the country produced in the Marcellus Shale region in northern Pennsylvania to homes and businesses in New Jersey, Pennsylvania and surrounding states. The Project was developed in response to market demands in New Jersey and Pennsylvania, and interest from shippers that require transportation capacity to accommodate increased demand and greater reliability of natural gas in the region. An additional supply of natural gas to the region will provide a benefit to consumers, utilities and electric generators by providing enhanced competition among suppliers and pipeline transportation providers. Additional information on the purpose and need for the proposed PennEast Project can be found in Section 1.1 of Resource Report 1 (Appendix A).

- *The availability of alternative locations not subject to flooding for the proposed use.*

Given the “cross country” linear nature of the proposed Project, temporary impacts within areas subject to flooding is unavoidable. To mitigate for temporary disturbances within floodway locations, PennEast will implement the BMPs and construction procedures detailed in the E&SCP (see Appendix C), as described in Section 2.5.4. These procedures are anticipated to allow for the safe installation of the Project, while minimizing impacts to floodway locations. Additionally, all permanent components of the Project located in floodway areas will be installed at a minimum of three (3) feet below surface grade and all surface locations will be restored to preconstruction grades and conditions; therefore, no permanent impacts will occur within floodway areas.

- *The compatibility of the proposed use with existing development and development anticipated in the foreseeable future.*

Permanent impacts to land use areas crossed by the Project will be limited to locations required for the operational ROW, new access roads, and aboveground facilities. Information pertaining to the existing residential, commercial, and industrial areas affected by the proposed Project, as well as the proposed mitigation measures to limit impacts to the affected properties can be found in Sections 8.3.2, 8.3.3 and 8.5 of Resource Report 8 (Appendix A).

- *The relationship of the proposed use to any applicable comprehensive plan or flood plain management program for the area.*

All components of the proposed Project that are located within areas subject to flooding events will be installed a minimum of three (3) feet below the surface grade in upland locations (five, 5, feet below surface grade at waterbody crossings) and no aboveground facilities will be located in the 100-year flood plain. Irrespective of this, PennEast will coordinate with the applicable agencies to ensure both construction and operation procedures are consistent with any established flood plan or flood management programs for the area.

- *The safety of access to the property in times of flood for ordinary and emergency vehicles.*

To the extent practicable, existing public and private road crossings will be used as the primary means to access the ROW during construction and operation of the Project. In addition to these access points, PennEast has identified temporary and permanent access roads for use during construction and operation of the Project. All proposed permanent access roads have been sited outside of 100-year floodplain areas and these access points will be utilized for general maintenance of the operational ROW, as well as for regularly scheduled ground patrols. As a result, access to areas within flood hazard locations will be maintained throughout operation of the Project.

- *The expected heights, velocity, duration, rate of rise and sediment transport of the flood water expected at the site.*

As detailed in Section 2.3.1.3 of Resource Report 2 (Appendix A) and in Table 2.5-5, installation of the Project within flood hazard areas will occur at multiple locations in Pennsylvania and New Jersey. Temporary activity within the flood plain areas will be limited to the installation of the pipeline facilities. Site activity at the individual waterbody crossing locations is anticipated to be completed within 24 to 48 hours of initial trenching operations and all affect areas will be restored to preconstruction conditions. Given the short-term nature of the Project within the immediate flood plan corridors of the waterbody crossing locations, and the requirement to return all disturbed locations back to their original conditions, formal evaluations pertaining to the floodway characteristics for the affected waterbodies was not performed for the Project.

- *The degree to which the proposed activity would alter natural water flow or water temperature.*

Temporary impacts on surface waters include disturbance of stream banks, removal of riparian vegetation and in some instances the temporary diversion of stream flow during dry crossing construction. PennEast will adhere to the Project's E&SCP (see Appendix C) and the BMPs provided in Section 2.5.3 to reduce the amount and duration of surface water disturbance. Site activity at the individual waterbody crossing locations is anticipated to be completed within 24 to 48 hours of initial trenching operations and all affected areas will be restored to preconstruction conditions.

Thermal impacts resulting from the clearing of vegetation are anticipated to be temporary and minimal as construction ROW widths will be reduced at waterbody crossing locations and all disturbed riparian corridors will be revegetated in accordance with the E&SCP (see Appendix C) guidelines.

- *The degree to which archaeological or historic sites and structures, endangered or rare species or animal or plants, high quality wildlife habitats, scarce vegetation types, and other irreplaceable land types would be degraded or destroyed.*

PennEast has evaluated the Project's potential effects on vegetation, wildlife, fisheries, aquatic resources and cultural resources. An analysis describing the potential cumulative impact that could potentially result from construction of the Project can be found in Section 1.4 of Resource Report 1 (Appendix A). Specific details pertaining to the existing resources listed previously and the potential impacts and mitigation can be found in Resource Report 3 and Resource Report 4 (Appendix A).

- *The degree to which the natural, scenic and aesthetic values at the proposed activity site could be retained.*

Visual impacts associated with the Project have been evaluated, minimized, and avoided wherever possible. PennEast has minimized impacts to visual resources from construction of the pipeline segments by proposing to co-locate the pipeline with existing pipeline ROWs to the extent practical. The Project is not anticipated to have any significant permanent visual impacts on any federal or state listed visually sensitive areas, such as scenic roads, rivers, or natural landmarks as these features are not present in the Project area. As previously described, all Project facilities within the 100-year flood plain will be installed a minimum of three (3) feet below the surface grade in upland locations (five, 5, feet below surface grade at waterbody crossings) and temporarily disturbed ROW locations will be restored and revegetated in accordance with the applicable federal and state requirements as detailed in the E&SCP (see Appendix C). Permanent impacts within flood plain locations will be limited to the loss of forested locations within the 50 foot (within uplands) or 10 foot (within wetlands) operational ROW.

B. The project shall not:

- *Endanger human life.*

To protect the integrity of the pipeline during flood events, the Project facilities have been designed, and will be constructed, tested, operated, and maintained to conform with applicable federal, state, and local requirements, including USDOT regulations at 49 CFR Part 192, "Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards" and Commission regulations at 18 CFR Section 380.15, "Siting and Maintenance Requirements." The pipeline system will include many pipeline design and equipment features, in addition to routine inspection and maintenance programs, to increase the overall safety of the system and protect the public from any system failures due to natural catastrophes, such as severe flooding. Some of the measures include, but are not limited to, coating the pipeline with concrete to prevent it from floating at specific wetland and waterbody locations and extending the minimum cover depth of five (5) feet under surface grade of waterbodies.

- *Have high flood damage potential.*

Activities resulting in the potential for flood damage will be limited to temporary site disturbances associated with the installation of pipeline facilities. During operation of the Project, no flood damage potential will occur, as none of the aboveground facilities proposed for the Project are located within

the 100-year flood plain. To reduce the potential for flood damage, PennEast will make every effort to expedite construction when working in floodway locations and will remove equipment and construction materials immediately following restoration of the workspace. During construction, PennEast will monitor the local weather forecast and waterbody flow conditions and will implement the necessary measures such as the removal or securing of construction materials or equipment in the event a high-water event is anticipated.

- *Obstruct flood flows nor increase flood heights or velocities unduly whether acting along or in combination with other uses.*

All site disturbances within the 100-year flood plain will be limited to temporary impacts related to the installation of the pipeline facilities. PennEast has proposed to cross all waterbodies utilizing dry crossing techniques which will allow the waterbody flow to be maintained during all phases of construction. All waterbody crossings will be designed to withstand maximum anticipated waterbody flows during the time of the crossing. No permanent structures have been proposed within the 100-year flood plain; therefore, the Project will not obstruct flood flows, increase flood height or flood velocities. Additional details pertaining to the crossing methods proposed for the Project can be found in Section 2.3.2 of Resource Report 2 as well as the E&SCP (Appendix C).

- *Degrade significantly the water carrying capacity of any delineated floodway or channel.*

As previously mentioned, disturbed floodplain surface areas as well as waterbody bed and bank locations will be restored to preconstruction grades and contours and will be permanently revegetated and stabilized in accordance with the procedures found in PennEast's E&SCP (see Appendix C). A description of the restoration measures proposed for waterbody crossing locations can be found in Section 2.3.3.1 of Resource Report 2 as well as the E&SCP.

- *Increase significantly the rate of local runoff, erosion, or sedimentation.*

All workspace locations within flood hazard areas will be restored to their original site conditions. PennEast will implement the soil erosion and sediment control BMPs detailed in the Project-specific E&SCP (see Appendix C) to mitigate for impacts related to erosion control during construction and restoration of the Project.

- *Degrade significantly the quality of surface water or the quality or quantity of ground water.*

The construction, restoration and revegetation procedures outlined in the E&SCP (Appendix C) will be implemented to prevent impacts to surface water and ground water resources crossed by the Project.

- *Be susceptible to flotation.*

As previously discussed, all components of the Project located within areas subject to flooding will be installed at a minimum of three (3) feet below surface grade in upland locations and five (5) feet below surface grade at waterbody crossings. As an additional safety measure, PennEast will install concrete coated pipe at all waterbody crossing locations to ensure negative buoyancy.

- *Have service facilities installed below the elevation of the regulatory flood without being adequately flood proofed.*

No aboveground facilities will be installed within the 100-year flood plain and PennEast will implement the design measures detailed previously as well within the E&SCP (see Appendix C) to ensure pipeline facilities are secure within areas subject to flooding.

Based on the information provided, the proposed Project complies with the conditions contained within Section 6.4.2 of the Flood Plain Regulations.

2.5.4.2 Reservoir and Recreational Project Areas within the Delaware River Basin

PennEast identified public land, recreation areas, conservation areas, and other areas designated as having special land use crossed by or located within the vicinity of the Project. These areas were determined by reviewing publicly available websites and databases of federal, state, and local agencies; public websites; and other sources of publicly available information. Additional information was obtained for these areas through consultations with the relevant federal, state, or local agencies; reviewing aerial photographs and maps of the Project area; a title search of lands crossed by the Project facilities; and through field surveys conducted in 2014 and 2015. A detailed list indicating the acres of temporary workspace and new permanent ROW within national and state non-urban recreational areas as defined in Section III of the DRBC's July 2001 Comprehensive Plan crossed by the Project has been provided in Table 2.5-6 below.

**Table 2.5-6
National and State Non-Urban Recreational Areas Crossed by the PennEast Project**

Location	Acres within the Temporary Workspace	Acres within the Permanent ROW
F.E. Walter Reservoir	1.80	1.33
Hickory Run State Park	10.14	20.97
Weiser State Forest	4.32	4.20
Beltzville State Park	2.85	6.35
Beltzville Reservoir	0.00	0.71
Delaware Canal Trail	0.00	0.09
Lower Delaware River National Wild And Scenic River	22.27	17.66
Delaware And Raritan Canal State Park	0.00	0.33
Washington Crossing State Park	3.22	2.70

3.0 WATER USE FOR CONSTRUCTION ACTIVITIES

PennEast is requesting a permit for up to 45.260 mg of water from multiple sources to conduct HDD activities and for hydrostatic testing operations, as well as other ancillary functions (e.g., dust control) for the Project within the drainage basin of the Delaware River. Of that total, 4.661 mg will be supplied by other permitted uses in the basin. As such, the Project may require a one-time withdrawal of up to 40.599 mg from new sources. Negotiations for the purchase of additional permitted volume are ongoing throughout the basin which would further reduce withdrawals from new sources.

The following sections provide a brief overview of each major use with reference to the applicable document and section number containing additional details related to the proposed activities. Table 3.1-1 describes the proposed hydrostatic test water, HDD and other ancillary activities withdrawal source locations, quantities and rates requested, proposed discharge rates and locations, and requested receiving waters for the pipeline facilities within the Delaware River Basin.

Table 3.1-1
Water Withdrawal and Discharge Locations for Construction Activities Associated with the PennEast Project

Proposed Source ¹	Withdrawal Location ID#	Approximate Volume Required (gallons)	Requested Maximum Withdrawal Rate (gpm) ²	Approximate Source Location	Associated Watershed (10-digit HUC) ³	Purpose for Water Use	Approximate Dewatering Location	Associated Watershed (10-digit HUC)	Approximate Discharge Volume (gallons)	Dewatering Location ID# ⁴	Nearest Requested Receiving Water ⁵	Water Volume Consumptive
Water Supplies for Dust Control Activities												
Lake Harmony/ Big Boulder Lake	W1 or W2	158,400	2,500	41° 3'35.14"N, 75°36'14.18"W or 41° 2'46.83"N, 75°35'12.21"W	0204010601	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 10 days	N/A	N/A	N/A	N/A	N/A	Yes
Lake Harmony/ Big Boulder Lake	W1 or W2	633,600	2,500	41° 3'35.14"N, 75°36'14.18"W or 41° 2'46.83"N, 75°35'12.21"W	0204010601	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 10 days	N/A	N/A	N/A	N/A	N/A	Yes
Bethlehem Water Authority Hydrant	W3	1,003,200	TBD	40°53'49.06"N, 75°33'37.45"W	0204010604	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 10 days	N/A	N/A	N/A	N/A	N/A	Yes
Bethlehem Water Authority Hydrant	W3	924,000	TBD	40°53'49.06"N, 75°33'37.45"W	0204010604	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 10 days	N/A	N/A	N/A	N/A	N/A	Yes
Lehigh River	W9	1,848,000	5,000	40°38'30.27"N, 75°16'40.95"W	0204010608	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 10 days	N/A	N/A	N/A	N/A	N/A	Yes
Lehigh River	W9	237,600	5,000	40°38'30.27"N, 75°16'40.95"W	0204010608	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 10 days	N/A	N/A	N/A	N/A	N/A	Yes
Delaware River	W11	1,056,000	5,000	40°34'58.09"N, 75°11'41.02"W	0204010506	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 10 days	N/A	N/A	N/A	N/A	N/A	Yes
Delaware River	W11	1,214,400	5,000	40°34'58.09"N, 75°11'41.02"W	0204010506	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 10 days	N/A	N/A	N/A	N/A	N/A	Yes
Delaware River	W11	1,082,400	5,000	40°34'58.09"N, 75°11'41.02"W	0204010506	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 10 days	N/A	N/A	N/A	N/A	N/A	Yes

Proposed Source ¹	Withdrawal Location ID#	Approximate Volume Required (gallons)	Requested Maximum Withdrawal Rate (gpm) ²	Approximate Source Location	Associated Watershed (10-digit HUC) ³	Purpose for Water Use	Approximate Dewatering Location	Associated Watershed (10-digit HUC)	Approximate Discharge Volume (gallons)	Dewatering Location ID# ⁴	Nearest Requested Receiving Water ⁵	Water Volume Consumptive
Delaware River	W11	897,600	5,000	40°34'58.09"N, 75°11'41.02"W	0204010506	• Spread on site for dust control • Value assumes 26,400 gallons of water used per mile • Value assumes water is applied 2 times (avg) per day for 10 days	N/A	N/A	N/A	N/A	N/A	Yes
Dust Control Subtotal		9,055,200										
Water Supplies for HDD Activities												
Bethlehem Water Authority Hydrant	W3	2,794,355	TBD	40°53'49.06"N, 75°33'37.45"W	0204010604	• Drilling operations	N/A	N/A	N/A	N/A	N/A	Yes
Bethlehem Water Authority Hydrant	W3	314,361	TBD	40°53'49.06"N, 75°33'37.45"W	0204010604	• Buoyancy control; discharge to overland dewatering structure	40°52'48.16"N 75°32'50.66"W	0204010604	314,361	D1	Pohopoco Creek	No
Hydrant 11 (Easton Suburban Water Authority)	W10	1,350,212	TBD	40°39'20.69"N, 75°17'17.85"W	0204010608	• Drilling operations	N/A	N/A	N/A	N/A	N/A	Yes
Hydrant 11 (Easton Suburban Water Authority)	W10	151,899	TBD	40°39'20.69"N, 75°17'17.85"W	0204010608	• Buoyancy control; discharge to overland dewatering structure	40°38'58.99"N, 75°16'53.20"W	0204010608	151,899	D7	UNT of Lehigh River	No
Lehigh River	W9	1,925,520	5,000	40°38'30.27"N, 75°16'40.95"W	0204010608	• Drilling operations	N/A	N/A	N/A	N/A	N/A	Yes
Lehigh River	W9	216,621	5,000	40°38'30.27"N, 75°16'40.95"W	0204010608	• Buoyancy control; discharge to overland dewatering structure	40°38'58.99"N, 75°16'53.20"W	0204010608	216,621	D7	UNT of Lehigh River	No
Lehigh River	W9	1,115,388	5,000	40°38'30.27"N, 75°16'40.95"W	0204010608	• Drilling operations	N/A	N/A	N/A	N/A	N/A	Yes
Lehigh River	W9	125,486	5,000	40°38'30.27"N, 75°16'40.95"W	0204010608	• Buoyancy control; discharge to overland dewatering structure	40°38'2.65"N, 75°16'43.82"W	0204010608	125,486	D8	Lehigh River	No
Delaware River	W11	1,331,430	5,000	40°34'58.09"N, 75°11'41.02"W	0204010506	• Drilling operations	N/A	N/A	N/A	N/A	N/A	Yes
Delaware River	W11	149,782	5,000	40°34'58.09"N, 75°11'41.02"W	0204010506	• Buoyancy control; discharge to overland dewatering structure	40°35'4.30"N, 75°11'55.39"W	0204010506	149,782	D9	Delaware River	No
Hydrant 14 (New Jersey American Water)/ Hydrant 15 (New Jersey American Water)/ Delaware River	W14, W15, or W11	2,254,267	TBD/ 5,000	40°31'54.00"N, 75°03'28.92"W or 40°31'49.18"N, 75° 3'31.15"W or 40°34'58.09"N, 75°11'41.02"W	0204010506	• Drilling operations	N/A	N/A	N/A	N/A	N/A	Yes

Proposed Source ¹	Withdrawal Location ID#	Approximate Volume Required (gallons)	Requested Maximum Withdrawal Rate (gpm) ²	Approximate Source Location	Associated Watershed (10-digit HUC) ³	Purpose for Water Use	Approximate Dewatering Location	Associated Watershed (10-digit HUC)	Approximate Discharge Volume (gallons)	Dewatering Location ID# ⁴	Nearest Requested Receiving Water ⁵	Water Volume Consumptive
Hydrant 14 (New Jersey American Water)/ Hydrant 15 (New Jersey American Water)/ Delaware River	W14, W15, or W11	253,605	TBD/ 5,000	40°31'54.00"N, 75°03'28.92"W or 40°31'49.18"N, 75° 3'31.15"W or 40°34'58.09"N, 75°11'41.02"W	0204010506	• Buoyancy control; discharge to overland dewatering structure	40°29'29.67"N, 75° 1'5.18"W	0204010509	253,605	D14	Lockatong Creek	No
Hydrant 17 (New Jersey American Water)/ Delaware River	W17 or W11	1,455,881	TBD/ 5,000	40°18'32.97"N, 74°48'46.49"W or 40°34'58.09"N, 75°11'41.02"W	0204010506	• Drilling operations	N/A	N/A	N/A	N/A	N/A	Yes
Hydrant 17 (New Jersey American Water)/ Delaware River	W17 or W11	163,786	TBD/ 5,000	40°18'32.97"N, 74°48'46.49"W or 40°34'58.09"N, 75°11'41.02"W	0204010506	• Buoyancy control; discharge to overland dewatering structure	40°20'2.03"N, 74°53'34.74"W	0204010509	163,786	D16	Moore Creek	No
Hydrant 17 (New Jersey American Water)/ Delaware River	W17 or W11	1,209,321	TBD/ 5,000	40°18'32.97"N, 74°48'46.49"W or 40°34'58.09"N, 75°11'41.02"W	0204010506	• Drilling operations	N/A	N/A	N/A	N/A	N/A	Yes
Hydrant 17 (New Jersey American Water)/ Delaware River	W17 or W11	136,048	TBD/ 5,000	40°18'32.97"N, 74°48'46.49"W or 40°34'58.09"N, 75°11'41.02"W	0204010506	• Buoyancy control; discharge to overland dewatering structure	40°18'47.38"N, 74°49'13.56"W	0204010509	136,048	D17	Woolsey Brook	No
Hydrant 17 (New Jersey American Water)/ Delaware River	W17 or W11	1,197,575	TBD/ 5,000	40°18'32.97"N, 74°48'46.49"W or 40°34'58.09"N, 75°11'41.02"W	0204010506	• Drilling operations	N/A	N/A	N/A	N/A	N/A	Yes
Hydrant 17 (New Jersey American Water)/ Delaware River	W17 or W11	134,732	TBD/ 5,000	40°18'32.97"N, 74°48'46.49"W or 40°34'58.09"N, 75°11'41.02"W	0204010506	• Buoyancy control; discharge to overland dewatering structure	40°18'23.61"N, 74°48'19.59"W	0204010509	134,732	D18	Woolsey Brook	No

Proposed Source ¹	Withdrawal Location ID#	Approximate Volume Required (gallons)	Requested Maximum Withdrawal Rate (gpm) ²	Approximate Source Location	Associated Watershed (10-digit HUC) ³	Purpose for Water Use	Approximate Dewatering Location	Associated Watershed (10-digit HUC)	Approximate Discharge Volume (gallons)	Dewatering Location ID# ⁴	Nearest Requested Receiving Water ⁵	Water Volume Consumptive
Lake Harmony/ Big Boulder Lake	W1 or W2	2,536,049	2,500	41° 3'35.14"N, 75°36'14.18"W or 41° 2'46.83"N, 75°35'12.21"W	0204010601	• Drilling operations	N/A	N/A	N/A	N/A	N/A	Yes
Lake Harmony/ Big Boulder Lake	W1 or W2	285,307	2,500	41° 3'35.14"N, 75°36'14.18"W or 41° 2'46.83"N, 75°35'12.21"W	0204010601	• Buoyancy control; discharge to overland dewatering structure or haul water off-site	TBD	N/A	285,307	TBD	TBD	No
Hydrant 16 (United Water of Lambertville)/ Delaware River	W16 or W11	3,522,292	TBD/ 5,000	40°22'56.00"N, 74°56'4.61"W or 40°34'58.09"N, 75°11'41.02"W	0204010506	• Drilling operations	N/A	N/A	N/A	N/A	N/A	Yes
Hydrant 16 (United Water of Lambertville)/ Delaware River	W16 or W11	396,258	TBD/ 5,000	40°22'56.00"N, 74°56'4.61"W or 40°34'58.09"N, 75°11'41.02"W	0204010506	• Buoyancy control; discharge to overland dewatering structure or haul water off-site	TBD	TBD	396,258	TBD	TBD	No
HDD Subtotal		23,020,175										
Water Supplies for Hydrostatic Testing Activities												
Lake Harmony/ Big Boulder Lake	W1 or W2	31,500	2,500	41° 3'35.14"N, 75°36'14.18"W or 41° 2'46.83"N, 75°35'12.21"W	0204010601	• Test; haul water off-site	N/A	N/A	31,500	N/A	N/A	No
Blue Mountain Ski Resort	W4	10,500	2,500	40°49'12.68"N, 75°30'33.09"W	0204010605	• Test; discharge to overland dewatering structure	40°38'2.65"N, 75°16'43.82"W	0204010608	10,500	D8	Lehigh River	No
Lehigh River	W9	10,500	5,000	40°38'30.27"N, 75°16'40.95"W	0204010608	• Test; discharge to overland dewatering structure	40°48'34.60"N, 75°31'46.05"W	0204010605	10,500	D3	Aquashicola Creek	No
Hydrant 13 (Genon Energy Services LLC and NRG Oper.)	W13	39,613	TBD	40°33'56.77"N, 75°9'39.66"W	0204010509	• Test; discharge to overland dewatering structure	40°34'11.33"N, 75° 9'51.16"W	0204010509	39,613	D20	Delaware River	No
Lehigh River	W9	10,500	5,000	40°38'30.27"N, 75°16'40.95"W	0204010608	• Test; discharge to overland dewatering structure	40°36'31.91"N, 75°17'57.63"W	0204010608	10,500	D19	East Branch Lower Saucon	No
Hydrant 16 (United Water of Lambertville)/ Delaware River	W16 or W11	10,500	5,000	40°22'56.00"N, 74°56'4.61"W or 40°34'58.09"N, 75°11'41.02"W	0204010506	• Test; discharge to overland dewatering structure	40°23'20.87"N, 74°55'59.87"W	0204010509	10,500	D15	Alexauken Creek	No

Proposed Source ¹	Withdrawal Location ID#	Approximate Volume Required (gallons)	Requested Maximum Withdrawal Rate (gpm) ²	Approximate Source Location	Associated Watershed (10-digit HUC) ³	Purpose for Water Use	Approximate Dewatering Location	Associated Watershed (10-digit HUC)	Approximate Discharge Volume (gallons)	Dewatering Location ID# ⁴	Nearest Requested Receiving Water ⁵	Water Volume Consumptive
Hydrant 16 (United Water of Lambertville)/ Delaware River	W16 or W11	10,500	5,000	40°22'56.00"N, 74°56'4.61"W or 40°34'58.09"N, 75°11'41.02"W	0204010506	• Test; discharge to overland dewatering structure	40°24'4.46"N, 74°54'46.47"W	0204010509	10,500	D21	Alexauken Creek	No
Mainline Spread 2												
Reused water from Test Section 5 MP 21.8 – MP 26.7	N/A	-	N/A	N/A	N/A	• 1,048,725 gallons required to test; push to overland dewatering structure	N/A	N/A	-	Push to D2	N/A	No
Reused water from Test Section 6 MP 26.7 – MP 40.7	N/A	-	N/A	N/A	N/A	• 1,265,527 gallons required to test; push to Test Section 4; push to overland dewatering structure	N/A	N/A	-	Push to D2	N/A	No
Lake Harmony/ Big Boulder Lake/ Bethlehem Water Authority Hydrant	W1, W2, or W3	3,592,602	2,500/ 2,500/ TBD	41° 3'35.14"N, 75°36'14.18"W or 41° 2'46.83"N, 75°35'12.21"W or 40°53'49.06"N 75°33'37.45"W	0204010601	• 3,592,602 gallons required to test; push to Test Sections 5 and 7; push to overland dewatering structure	N/A	N/A	-	Push to D2	N/A	No
Reused water from Test Section 6 MP 26.7 – MP 40.7	N/A	-	N/A	N/A	N/A	• 1,512,894 gallons required to test; push to Test Section 8; push to overland dewatering structure	N/A	N/A	-	Push to D2	N/A	No
Reused water from Test Section 7 MP 40.7 – MP 46.5	N/A	-	N/A	N/A	N/A	• 28,130 gallons required to test; push to Test Section 9	N/A	N/A	-	Push to D2	N/A	No
Reused water from Test Section 7 MP 40.7 – MP 46.5	N/A	-	N/A	N/A	N/A	• 382,155 gallons required to test; discharge to overland dewatering structure	40°50'17.25"N, 75°30'32.75"W	0204010605	3,592,602	D2	Buckwha Creek	No
Spread 3												
Reused water from Test Section 11 MP 48.8 – MP 51.3	N/A	-	N/A	N/A	N/A	• 183,778 gallons required to test; push to overland dewatering structure	N/A	N/A	-	Push to D4	N/A	No
Reused water from Test Section 12 MP 51.3 – MP 54.5	N/A	-	N/A	N/A	N/A	• 640,202 gallons required to test; push to Test Section 10; discharge to overland dewatering structure	40°48'17.95"N 75°31'44.53"W	0204010608	640,202	D4	Indian Creek	No
Reused water from Test Section 15 MP 59.4 – MP 66.0	N/A	-	N/A	N/A	N/A	• 831,577 gallons required to test; push to Test Section 11; discharge to overland dewatering structure	40°47'19.42"N 75°28'42.59"W	0204010608	191,375	D5	Indian Creek	No
Reused water from Test Section 15 MP 59.4 – MP 66.0	N/A	-	N/A	N/A	N/A	• 230,473 gallons required to test; discharge to overland dewatering structure	40°47'12.11"N 75°27'45.28"W	0204010608	848,324	D6	UNT of Hokendauqua Creek	No
Reused water from Test Section 15 MP 59.4 – MP 66.0	N/A	-	N/A	N/A	N/A	• 1,039,472 gallons required to test; push to Test Section 12; push to overland dewatering structure	N/A	N/A	-	Push to D6	N/A	No

Proposed Source ¹	Withdrawal Location ID#	Approximate Volume Required (gallons)	Requested Maximum Withdrawal Rate (gpm) ²	Approximate Source Location	Associated Watershed (10-digit HUC) ³	Purpose for Water Use	Approximate Dewatering Location	Associated Watershed (10-digit HUC)	Approximate Discharge Volume (gallons)	Dewatering Location ID# ⁴	Nearest Requested Receiving Water ⁵	Water Volume Consumptive
Reused water from Lehigh River/ Delaware River (Test Section 18) MP 70.5 – MP 77.4	W9 or W11	1,679,901	5,000	40°38'30.27"N, 75°16'40.95"W or 40°34'58.09"N 75°11'41.02"W	0204010608/ 0204010506	• 1,679,901 gallons required to test; push to Test Sections 13 and 14; push to overland dewatering structure	N/A	N/A	-	Push to D6	N/A	No
Reused water from Test Section 17 MP 68.0 – MP 70.5	N/A	-	N/A	N/A	N/A	• 522,344 gallons required to test; push to overland dewatering structure	N/A	N/A	-	Push to D7	N/A	No
Reused water from Test Section 18 MP 70.5 – MP 77.4	N/A	-	N/A	N/A	N/A	• 644,131 gallons required to test; push to Test Section 16; discharge to overland dewatering structure	40°38'58.99"N, 75°16'53.20"W	0204010608	644,131	D7	UNT of Lehigh River	No
Lehigh River/ Delaware River	W9 or W11	1,791,711	5,000	40°38'30.27"N, 75°16'40.95"W or 40°34'58.09"N, 75°11'41.02"W	0204010608/ 0204010506	• 1,791,711 gallons required to test; push to Test Section 17; discharge to overland dewatering structure	40°35'4.30"N, 75°11'55.39"W	0204010506	1,147,580	D9	Delaware River	No
Mainline Spread 4												
Reused water from Test Section 23 MP 89.9 – MP 110.4		-	N/A	N/A	N/A	• 2,332,758 gallons required to test; discharge to overland dewatering structure	40°33'4.08"N, 75° 3'42.33"W	0204010509	2,332,758	D10	Harihokake Creek	No
Reused water from Test Section 21 MP 86.4 – MP 89.8	N/A	-	N/A	N/A	N/A	• 23,086 gallons required to test; discharge to overland dewatering structure	40°32'59.12"N, 75° 3'41.96"W	0204010509	23,086	D11	Harihokake Creek	No
Reused water from Test Section 23 MP 89.9 – MP 110.4	N/A	-	N/A	N/A	N/A	• 862,732 gallons required to test; push to Test Section 20; discharge to overland dewatering structure	40°30'33.49"N, 75° 2'14.59"W	0204010509	862,732	D12	Copper Creek	No
Reused water from Test Section 23 MP 89.9 – MP 110.4	N/A	-	N/A	N/A	N/A	• 28,179 gallons required to test; discharge to overland dewatering structure	40°30'26.16"N, 75° 2'10.95"W	0204010509	28,179	D13	Copper Creek	No
Reused water from Delaware River (Test Section 19) MP 77.4 – MP 86.4	W11	5,338,022	5,000	40°34'58.09"N, 75°11'41.02"W	0204010506	• 5,338,022 gallons required to test; push to Test Sections 19, 21, 22, and 24; discharge to overland dewatering structure	40°18'47.38"N, 74°49'13.56"W	0204010509	2,091,267	D17	Woolsey Brook	No
Reused water from Test Section 23 MP 89.9 – MP 110.4	N/A	-	N/A	N/A	N/A	• 584,961 gallons required to test; push to overland dewatering structure	N/A	N/A	-	Push to D17	N/A	No
Laterals												
Lehigh River	W9	252,989	5,000	40°38'30.27"N, 75°16'40.95"W	0204010608	• 252,989 gallons required to test; discharge to overland dewatering structure	40°36'31.91"N, 75°17'57.63"W	0204010608	252,989	D19	East Branch Lower Saucon	No
Reused water from Delaware River (Test Section 19) MP 77.4 – MP 86.4	W11	405,394	5,000	40°34'58.09"N, 75°11'41.02"W	0204010506	• 405,394 gallons required to test; discharge to overland dewatering structure	40°24'4.46"N, 74°54'46.47"W	0204010509	405,394	D21	Alexauken Creek	No
Hydrostatic Testing Subtotal		13,184,231										

Proposed Source ¹	Withdrawal Location ID#	Approximate Volume Required (gallons)	Requested Maximum Withdrawal Rate (gpm) ²	Approximate Source Location	Associated Watershed (10-digit HUC) ³	Purpose for Water Use	Approximate Dewatering Location	Associated Watershed (10-digit HUC)	Approximate Discharge Volume (gallons)	Dewatering Location ID# ⁴	Nearest Requested Receiving Water ⁵	Water Volume Consumptive
Project Water Use Totals												
Dust Control		9,055,200										
Horizontal Directional Drill		23,020,175										
Hydrostatic Testing		13,184,231										
Consumptive		29,747,490										
Non-Consumptive		15,512,116										
Total		45,259,606										

Notes:

N/A= Not Applicable

TBD=To Be Determined

1. Negotiations for water withdrawals are in progress. Water sources are subject to change during the negotiation process.
2. The maximum requested withdrawal rate for the Lehigh River and Delaware River is 5,000 gpm. The maximum requested withdrawal rate for Lake Harmony, Big Boulder Lake, Blue Mountain Ski Resort Reservoirs and Meadow Run Ponds is 2,500 gpm. All withdrawals from existing sources (i.e., hydrants and locations with existing permitted supplies) will be withdrawn in accordance with their water-supply permit conditions.
3. Watershed data is associated with potential new surface water sources.
4. See corresponding Project figure in Appendix B5 for dewatering location identification numbers.
5. No direct discharges to surface waters will occur. All discharges will be directed to appropriate energy dissipation/filtration structures which will be constructed in well vegetated upland locations (see Section 4.2). The "Nearest Requesting Receiving Water" identifies the closest surface water source from the proposed discharge location.

As detailed above, PennEast is requesting a permit for up to 45.260 mg of water from multiple sources to conduct HDD activities and for hydrostatic testing operations, as well as other ancillary functions (e.g., dust control) for the Project within the drainage basin of the Delaware River. An overview table describing the proposed water use needs from each selected source for the PennEast Project has been provided in Table 3.1-2 below.

**Table 3.1-2
Summary of Water Use Needs for the PennEast Project**

Water Source	Hydrostatic Test Water	Horizontal Directional Drilling	Buoyancy	Total HDD	Dust Control	Maximum Total Use	Consumptive Use	Non-Consumptive
Delaware River	9,236,028	10,970,766	1,234,211	12,204,977	4,250,400	25,691,405	15,221,166	10,470,239
Lehigh River	3,745,601	3,040,908	342,107	3,383,015	2,085,600	9,214,216	5,126,508	4,087,708
BWA Hydrant	3,592,602	2,794,355	314,361	3,108,716	1,927,200	8,628,518	4,721,555	3,906,963
Lake Harmony/ Big Boulder Lake	3,624,102	2,536,049	285,307	2,821,356	792,000	7,237,458	3,328,049	3,909,409
Hydrant 17	0	3,862,777	434,566	4,297,343	0	4,297,343	3,862,777	434,566
Hydrant 16	21,000	3,522,292	396,258	3,918,550	0	3,939,550	3,522,292	417,258
Hydrant 13	39,613	2,254,267	253,605	2,507,872	0	2,547,485	2,254,267	293,218
Hydrant 14	0	2,254,267	253,605	2,507,872	0	2,507,872	2,254,267	253,605
Hydrant 15	0	2,254,267	253,605	2,507,872	0	2,507,872	2,254,267	253,605
Hydrant 11	0	1,350,212	151,899	1,502,111	0	1,502,111	1,350,212	151,899
Blue Mountain Ski Resort	10,500	0	0	0	0	10,500	0	10,500
Total Requested Gallons¹	13,184,231	20,692,290	2,327,885	23,020,175	9,055,200	45,259,606	29,747,490	15,512,116

¹Due to multiple potential sources for many of the individual withdrawals, in most cases the Total Requested and the sum of listed volumes are not equal

3.1 Hydrostatic Testing Operations

Following installation and backfilling operations, PennEast will conduct hydrostatic pressure testing of all pipeline segments and applicable aboveground facility components prior to placing them in-service. Hydrostatic pressure testing of natural gas pipelines and aboveground facilities will be conducted in accordance with USDOT 49 CFR 192 regulations and requirements. Testing operations will involve the filling of completed sections of pipeline with water and then pressurizing specific pipeline segments or aboveground facility piping components to levels higher than the maximum designated operating pressure. The pressure tests will be held for a minimum of eight (8) hours to be in compliance with USDOT 49 CFR 192 regulations. To facilitate the hydrostatic pressure testing of the pipeline system, PennEast is requesting water supply volumes from up to four (4) surface water resources located in the Delaware River Basin. Proposed locations for surface withdrawal operations have been detailed in Table 3.1-1 and additional details related to hydrostatic testing operations can be found in Section 1.5.1.10 of Resource Report 1 and Section 2.4.1 of Resource Report 2 (Appendix A) and the E&SCP (see Appendix C).

Within the Delaware River Basin, the pipeline is segmented into five (5) separate groups composed of twenty-one (21) Mainline Test Sections, two (2) Lateral Test Sections, and seven (7) test sections for associated facilities structures (i.e. interconnects, launcher sites, etc.). As shown in Table 3.1-1, each of these sections has a prescribed source and dewatering location for supplying and disposing of water for the hydrostatic pressure testing of the pipeline. Some of the test sections have multiple potential sources listed (i.e., Hydrant 16 or the Delaware River for the Lambertville Launcher Site), as discussed in Section 3.1.1.

To the extent practical, water from one test section will be used in other test sections, thereby reducing the total volume required for testing the 97.5 miles of Mainline pipeline within the Delaware River Basin. For instance, water for testing Mainline Test Section 23 will require 5,338 mg sourced from the Delaware River. That water will then be pushed into Mainline Test Sections 19 through 22, and 24.

The requested volume for each section shown in Table 3.1-1 is required to enter the pipeline at a constant rate that will propel associated equipment at a minimum allowable velocity. For the 36-inch diameter Mainline, the applicant is requesting 2,500 to 5,000 gallons per minute (gpm). For smaller diameter sections (laterals, launchers and interconnects), a lower rate can be used.

It is recognized that the requested rates may not always be available from the requested water sources. In such a case, water will be withdrawn from the source at a lower approved rate and placed in temporary storage facilities. At the time of the test, both the stored water and ongoing water withdrawals could be used to fill the pipe at the required rate.

A total of 13,184 mg will be required for hydrostatic pressure testing within the Delaware River Basin. Of that total, 0,071 mg will be provided by other permitted water users in the basin. Negotiations for the purchase of water from additional sources are ongoing. If additional purchased water is not an option, the Project will be supplied by the sources discussed in Section 3.1.1.

3.1.1 Hydrostatic Testing Sources and Volumes

Lake Harmony and Big Boulder Lake in Lake Harmony, Pennsylvania will supply water to test the Kidder Compressor Station (31,500 gallons). The ponds are located in different tributary watersheds to Tunkhannock Creek. Lake Harmony is operated by Lake Harmony Estates for recreation. It drains an area of 0.65 square miles (sq.mi.) and has a surface area of 108 acres. Big Boulder Lake is operated by the Big Boulder Lake Club for recreation and snowmaking at the Jack Frost and Big Boulder ski areas. It drains an area of 2.00 sq.mi. and has a surface area of 175 acres.

The required volume for the Kidder Compressor Station would represent a potential drawdown of less than 0.1 inches over the 175-acre area of Big Boulder Lake, and less than 0.1 inches in the 108-acre Lake Harmony.

Lake Harmony and Big Boulder Lake may also provide some or all of the water to test Spread 2 (3,592,602 gallons for Mainline Test Sections 4 through 9). As shown in Table 3.1-1, water for Spread 2 may alternatively be supplied by the Bethlehem Water Authority (BWA) and subject to their water-supply permit conditions. Assuming Lake Harmony and Big Boulder Lake were to each supply half of the total volume required for Spread 2 (1,796,301 gallons), the withdrawal would result in a potential drawdown of less than one inch in both Big Boulder Lake and Lake Harmony. At a maximum rate of 2,500 gpm (3.34 cubic feet per second [cfs]), the volume required to test Spread 2 would be provided in a 1.7-day period.

The Blue Mountain Ski Resort in Lower Towamensing Township, Pennsylvania will provide the 10,500 gallons of water needed to test the Blue Mountain interconnect. The Resort will provide that water in compliance with their water-supply permit requirements.

The Lehigh River between Bethlehem and Easton will supply water for testing the Hellertown Launcher and Mainline Launcher/Receiver (10,500 gallons), and the TCO & UGI-LEH Interconnects (10,500 gallons). The Lehigh River will also supply water for testing the Hellertown Lateral (252,989 gallons), and may provide some or all of the water required in Spread 3 (up to 3,471,612 gallons for Mainline Test Sections 10 through 18).

The USGS operates a long-term gaging station on the Lehigh River approximately 6 miles upstream (east) of the proposed withdrawal location. At that station (Lehigh River at Bethlehem, Pennsylvania, Station No. 01453000), the USGS has calculated an average daily flow (ADF) of 2,120 cfs and the average minimum streamflow expected for seven consecutive days once every ten years (7Q10) of 312 cfs (Stuckey and Roland, 2011). The requested 5,000 gpm (11.14 cfs) pumping rate represents only 0.5% of the ADF and 3.6% of the 7Q10. At a rate of 5,000 gpm, the largest single volume that may come from the Lehigh River for hydrostatic pressure testing (1,791,711 gallons for Mainline Test Section 18) would be withdrawn in a single 6-hour period.

Water for testing the Gilbert Interconnect and the Etwon & Gilbert Interconnect (39,613 gallons) will be provided by a municipal supply from a hydrant in Holland, New Jersey. That volume (39,613 gallons) will be supplied by the plant in accordance with their agreement with the municipal authority serving them.

The Lambertville Launcher Site (10,500 gallons) and the Algonquin and TETCO Interconnects (10,500 gallons) will be supplied by either a hydrant in West Amwell Township, New Jersey, or by the Delaware River near Riegelsville, New Jersey. The Delaware River will also be used to supply testing water for sections in Spread 4 (5,338,022 gallons for Mainline Test Sections 19 through 24), the Lambertville Lateral, and some or all of the water required in Spread 3 (up to 3,471,612 gallons for Mainline Test Sections 10 through 18).

The USGS maintains a long-term station on the Delaware River 0.5 miles north (upstream) of the crossing. At that station (Delaware River at Riegelsville, NJ, Station No. 01457500), the USGS has calculated an ADF of 9,693 cfs and a 7Q10 of 1,661.2 cfs (Watson et al, 2005). The maximum instantaneous pumping rate of 5,000 gpm (11.14 cfs) represents only 0.1% of the ADF and 0.7% of the 7Q10 upstream of the Project. At a rate of 5,000 gpm, the largest single volume that may come from the Delaware River (5,338,022 gallons for Mainline Test Section 23) would be withdrawn in a single 18-hour period.

3.1.2 Disposal of Hydrostatic Test Water

Water that is used for hydrostatic pressure testing will remain clean and will be discharged to land draining to the Delaware River. The location of discharge for each test section is shown in Table 3.1-1. Discharge will be directed to BMPs at a designed rate (Section 4.2). Water-quality monitoring of discharge will comply with applicable requirements (Section 6.1).

3.2 Horizontal Directional Drill Activities

HDD is a trenchless method of installing pipelines in areas where traditional open cut excavations are not feasible due to sensitive resource areas or logistical reasons. The HDD process involves the drilling of a small diameter hole, or pilot hole, along a predetermined design path. The pilot hole is then gradually enlarged until it is sufficient to accommodate the pipeline being installed. A critical component of the HDD process involves the use of drilling fluid, which is typically a mixture of water and bentonite or polymer. This drill fluid is continuously pumped to the cutting head or drill bit to facilitate the removal of soil, stabilize the bore hole, cool the cutting head, and lubricate the bore to allow for the passage of the pipeline. PennEast is requesting water supply volumes from up to three surface waters within the Delaware River Basin to support the proposed HDD installations detailed in Resource Report 1 (see Appendix A) as well as within Table 3.2-1. Information on the proposed surface water withdrawal locations can be found in Table 3.1-1 and additional details related to the HDD process be found in Sections 1.5.2.8.2 of Resource Report 1, Sections 2.3.2.2 of Resource Report 2 (see Appendix A) and the E&SCP (see Appendix C).

Table 3.2-1
Horizontal Directional Drill Locations for the PennEast Project

Location/Feature	Mile Post ¹	Begin Mile Post ¹	End Mile Post ¹	Length (ft.)
US Hwy 81 / St. Hwy 315	10.6	10.4	10.7	1550
Wild Creek & Pohopoco Creek (Beltzville Lake) ²	43.5	43.0	44.1	6100
St. Lukes (Lowes)	70.0	69.7	70.3	2900
Lehigh River	70.8	70.4	71.2	4900
Interstate 78	71.6	71.4	71.9	2400
Delaware River and Canal	77.4	77.2	77.7	2850
Lackatong Creek	92.8	92.2	93.4	6300
Pleasant Valley Road	106.2	105.9	106.5	3100
Washington Crossing Pennington Rd	111.1	110.9	111.4	2550
CSXT Railroad	112.1	111.9	112.4	2550

¹ Mileposts are estimated due to rounding

² New Wild Creek & Pohopoco Creek HDD is the combination of the Pohopoco Creek and Pohopoco Waterbody HDD crossings are from the September FERC filing

Most of the water required for HDD becomes incorporated into drilling fluids, which is generally considered to be a consumptive use. Drilling fluids either remain in place as part of the drilling and construction process or will be hauled away after use for proper disposal. During the drilling process, water is also required to fill a portion of the pipeline to maintain proper buoyancy. That water will only be in contact with clean pipe and can be discharged back onto land within the Delaware River Basin.

During drilling operations, between 2,500 and 5,000 gpm may be required at the drill site to pressurize and support the drilling process. The rate of instantaneous withdrawal from surface water sources will vary depending on the source (2,500 to 5,000 gpm). The daily total withdrawal will vary, being dependant in part on whether the drilling operations continue on a 24 hour per day schedule.

A total of 16,280 mg will be required for HDD in the Delaware River Basin. An additional 6,740 mg may also be needed for two crossings that remain under consideration, for a potential total of 23,020 mg. Of that total, 2,328 mg (10%) would be used for buoyancy control and represents a non-consumptive use.

Negotiations for the purchase of water from other permitted water users along the pipeline route are ongoing. Purchased water will supply at least 4,611 mg for two of the crossings. As such, the Project may require a one-time withdrawal of up to 18,409 mg from new sources. Purchased water may supply an additional 10,724 mg for a total of 15,335 mg (67% of the potential total for HDD). If purchased water is not an option, the Project will be supplied by the sources discussed in Section 3.2.1.

3.2.1 HDD Sources and Volumes

Municipal sources will supply water for HDD at two of the crossings. BWA will supply water (3,108,716 gallons) for the crossing of Beltzville Lake at MP 43.5. The crossing at St. Luke's University Hospital (MP 70.2) will be supplied with 1,502,111 gallons by a hydrant in Bethlehem Township, Pennsylvania. Water from those sources will be supplied in accordance with their water-supply permit conditions.

The Lehigh River between Bethlehem and Easton will supply water for HDD activities at the crossing of the Lehigh River at MP 71.0, and the crossing of Interstate 78 at MP 71.9. For those two crossings, a total of 3,383,015 gallons will be required for HDD activities. Most of that water will be mixed into drilling fluids (3,040,908 gallons) and the rest will be used for buoyancy control (342,107 gallons). The maximum pumping rate of 5,000 gpm from the Lehigh River (11.14 cfs) represents 0.5% of the ADF and 3.6% of the 7Q10 at the upstream gaging station (see Section 3.1.1).

The Delaware River near Riegelsville, New Jersey will supply water for HDD activities under the Delaware River at MP 77.6. A total of 1,481,212 gallons will be required for the crossing, with 149,782 gallons being used temporarily for buoyancy control. In addition, the Delaware River may supply up to 10,723,765 gallons for the crossings at the solar array at MP 91.0, Pleasant Valley Road at MP 105.7, Washington Crossing at MP 110.7, the West Trenton Railroad at MP 111.7, and Alexauken Creek at MP 100.5. Water for those crossings may be supplied with purchased water from hydrants in several New Jersey towns (Frenchtown, Hopewell Township, and West Amwell Township). The maximum pumping rate of 5,000 gpm from the Delaware River represents 0.1% of the ADF and 0.7% of the 7Q10 upstream of the Project (Section 3.1.1).

If the crossing of Interstate 80 at MP 26.8 is undertaken, HDD water will be supplied from Lake Harmony and Big Boulder Lake. A total of 2,821,536 gallons would be required for the crossing, with 285,307 gallons of that total being used only temporarily for buoyancy control. The total volume of 2,821,536 gallons represents approximately one inch of water over the 108-acre area of Lake Harmony and approximately 0.6 inches of water over the 175-acre area of Big Boulder Lake.

Assuming the two features are used equally (1,410,768 gallons each), the potential volume represented would be approximately 0.5 and 0.3 inches, respectively. At a rate of 2,500 gpm, the entire volume needed for HDD under Interstate 80 could be withdrawn in a 19-hour period.

3.2.2 Disposal of HDD water

Most of the water for HDD either remains in place as part of the drilling and construction process or will be hauled away for proper disposal. Any remaining drilling fluids will be removed to a Waste Water Treatment Facility for proper disposal (EPA-approved facility capable of accepting PCB). Water that is used for buoyancy control will remain clean and will be discharged to land draining to the Delaware River. The locations of discharge for buoyancy water are shown in Table 3.1-1. That discharge will be directed to BMPs at a designed rate (Section 4.2). Water-quality monitoring of discharge will comply with applicable requirements (Section 6.1).

3.3 Dust Control

As discussed in Section 1.4.3.9 of Resource Report 1, the Project has been designed to minimize temporary impacts to air quality wherever possible. The operation of heavy construction equipment and its associated exhaust would suspend fugitive dust and other construction related particles in the air. These temporary impacts will be minimized by implementing water suppression as a fugitive dust control measure during construction of the Project. Water supply volumes for this use have been requested from municipal and surface water resources as detailed in Table 3.1-1.

During construction, the contractor will load water into tankers from approved sources and apply it as needed. For each mile requiring dust control, it is assumed that 26,400 gallons will be applied twice per day over a 10-day period. Less water will be required for dust control during wet weather. Current values for dust control are based on conservative dry-weather conditions.

Water needs and sources for dust control are broken out into eleven different sections along the pipeline route and it is assumed herein that all of the water for each section will be withdrawn from the source over a contiguous 10-day period to determine the maximum daily average withdrawal from each proposed source.

3.3.1 Dust Control Sources and Volumes

PennEast estimates a total of up to 9.055 mg may be required for dust control for the Project. Of that total, up to 1.927 mg (21%) may be provided by the BWA and subject to their water-supply permit conditions. Negotiations for the purchase of water from other permitted water users along the pipeline route are ongoing and may further reduce the total volume of water required for the Project from new sources. If purchased water is not an option, the Project will be supplied by the sources discussed in Section 3.3.1.

Water for dust control between MP 14.4 and 30.0 (158,400 gallons) and between MP 30.1 and 40.0 (633,600 gallons) may be trucked in from Lake Harmony and Big Boulder Lake in Lake Harmony, Pennsylvania. The ponds are located in different tributary watersheds to Tunkhannock Creek. If dust control water for both Mainline Test Sections is required over a single 10-day period, an average of 79,200 gpd would be withdrawn. That volume (79,200 gallons) is less than 0.03 inches in both Big Boulder Lake and Lake Harmony. The entire volume (792,000 gallons) would represent a potential drawdown of less than 0.3 inches in either Big Boulder Lake or Lake Harmony. If the withdrawal were taken equally from both ponds (396,000 gallons each), the withdrawal would represent a potential drawdown of less than 0.2 inches in both Big Boulder Lake and Lake Harmony.

Water for dust control for sections between MP 40.1 and MP 50.0 and between MP 50.1 and MP 60.0 may be supplied by a hydrant in Towamensing Township, Pennsylvania (BWA). If the combined total of 1,927,200 gallons for those two sections is required over a single 10-day period, BWA may supply up to 192,720 gpd (134 gpm). That temporary supply of water would be provided by BWA in compliance with their water-supply permit requirements.

Water for dust control in residential sections between MP 60.1 and MP 70.0, and for construction along the Hellertown Lateral may be supplied by the Lehigh River. Within these two sections, a total of 2,085,600 gallons may be withdrawn for dust control between Bethlehem and Easton, Pennsylvania. If all of that water is needed in a single 10-day period, an average of 208,560 gpd (0.32 cfs) would be withdrawn. That withdrawal would represent 0.02% of the ADF and 0.10% of the 7Q10 upstream of the Project (Section 3.1.1).

Water for dust control in residential sections between MP 70.1 and MP 80.0, MP 80.1 and MP 90.0, MP 90.1 and MP 100.0, MP 100.1 and MP 111.9 may be supplied by the Delaware River. Within these five (5) sections, a total of 4,250,400 gallons may be withdrawn for dust control from the Delaware River near Riegelsville, New Jersey. If all of that water is needed in a 10-day period, an average of 425,040 gpd (0.66 cfs) would be withdrawn. That withdrawal would represent 0.01% of the ADF and 0.04% of the 7Q10 upstream of the Project (Section 3.2.1).

3.3.2 Disposal of Dust Control Water

All water for dust control would be applied along the pipeline route in residential areas. The rate of that application would be sufficient only to maintain soil moisture. That water is unlikely to infiltrate to recharge underlying aquifers or runoff to surface-water features. Rather it is assumed that it will be either evaporated directly back into the air or transpired by nearby vegetation.

4.0 WATER WITHDRAWAL AND DISCHARGE PLANS

Table 3.1-1 and Section 3.1.1 describe the proposed hydrostatic test water withdrawal source locations, quantities and rates requested, proposed discharge rates and locations, and requested receiving waters for the pipeline facilities within the Delaware River Basin. The following sections refer to withdrawal and discharge structures associated with water withdrawals for the Project.

4.1 Withdrawal and Intake Devices to be Used

All surface water withdrawal operations will be conducted in accordance with the Project-specific E&SCP (see Appendix C), as well as any applicable federal or state permit requirements pertaining to the use of water supply volumes for construction activities. Test water will be obtained only from appropriate and approved sources and will be withdrawn at a rate that will not draw down the source to below approved levels.

PennEast anticipates that water will be withdrawn at a maximum rate of 2,500-5,000 gpm as indicated in Section 3.1. PennEast is proposing to utilize a screened intake device to conduct surface water withdrawal activities similar to those depicted in Appendix F. Multiple devices may be used if warranted based on flowrate to maintain an appropriate through-screen velocity. PennEast has not selected a final intake device to be used at the time of application submittal; the intake device(s) will be selected based on site-specific conditions (e.g., flowrate, depth of water, waterbody characteristics at site).

All intake systems utilized will be screened and designed with a through-screen velocity of less than 0.5 feet per second to avoid the impingement or entrainment of aquatic life. The intake devices proposed are designed to float at the water's surface, which allows for use while avoiding entrainment

of sediment and aquatic organisms associated with the waterbody's bed. The intakes will be secured to prevent drift. If the water levels are such that the floating intake device(s) cannot be properly installed, the intake device(s) will be resized or an alternative equivalent device(s) will be used to elevate the device(s) from the waterbody bottom. Modifications can be easily made to the intake device(s) to maintain appropriate through-screen velocities to avoid impacts to aquatic life.

PennEast will regularly inspect the water intake screen and will address any issues immediately. Pumps used for this operation will be placed on level ground within secondary containment. PennEast will make every effort to select intake locations that contain existing access points and clearings, such that the removal of vegetation outside the pipeline construction ROW will not be required or will be limited to what is essential to safely conduct water withdrawals. Water withdrawal operations will be adjusted as necessary for site-specific intake locations.

4.1.1 Metering Plan

PennEast will keep a log of filling operations that will be maintained throughout the filling process to account for water volumes that are acquired during hydrostatic test water withdrawals, withdrawals for HDD operations and water supply volumes for dust control measures. Flow meter readings, totalized gallons and fill pressure will be recorded throughout the duration of the water withdrawals. Instantaneous flow will be maintained and monitored by construction personnel who will be on site daily to inspect the fill equipment and intake devices.

4.2 Best Management Practices for Discharge Activities

In accordance with PennEast's E&SCP, dewatering of the pipeline system will consist of the discharge of water against a splash plate or other approved energy dissipating device to aerate, slow, and disperse the flow within a filtration structure such as a hay bale corral or barrier lined with geotextile fabric as shown in Figure 22 contained within Appendix G. Dewatering will occur in well-vegetated upland areas within the same source watershed as the withdrawal and at a rate of discharge that is appropriate for site conditions to prevent flooding and erosion. Additional details pertaining to hydrostatic discharge operations proposed for the PennEast Project can be found in Section 2.4.1 of Resource Report 2 (see Appendix A) and the E&SCP (see Appendix C).

4.3 Invasive Species Management

PennEast will implement best management practices to avoid and/or minimize the spread of potentially invasive, harmful, or nuisance aquatic species within the Delaware River Basin. Equipment (i.e., hoses, pumps, valves, tanks, secondary containment, screens, and matting) involved in the withdrawal, transfer, temporary storage and discharge of water will be inspected prior to onsite operation. Equipment will be required to be visibly free of soil, debris or plant material, and fully drained and dry with no residual water-before placing the equipment in use. Any visible debris or residual plant material observed would be cleaned as required so that the spread of invasive or nuisance species would be avoided and/or minimized.

PennEast proposes to utilize a screened floating intake structure at each water withdrawal site to prevent the accidental uptake of native or potentially invasive species as noted in Section 4.1 above. No equipment will enter the waterbody except the water withdrawal intake apparatus and piping, and withdrawal units will be outfitted with a backflow prevention device to prevent surface water returns during pumping operations. Water that remains clean during hydrostatic testing and HDD operations will be discharged to a haybale dewatering structure situated in an upland area to prevent the direct transport of any aquatic species into a waterbody as noted in Section 4.2 above. Water supply volumes utilized for HDD drilling fluids will be disposed of at an approved

waste disposal facility as described in Section 3.2.2 above. Water supplies obtained for dust suppression purposes will not be discharged to the ground surface within wetlands or on constructed equipment crossings that are installed over waterbodies. As a result of these invasive species management procedures, the additional treatment of water supply volumes to prevent the potential transport of invasive species is not anticipated for the Project.

5.0 STORM WATER MANAGEMENT

PennEast has developed a Project-specific E&SCP (see Appendix C) to offset temporary impacts to surface locations during construction of the proposed Project, as well as to mitigate for impacts during surface water withdrawal and discharge operations. The E&SCP describes the basic environmental construction techniques that will be implemented to protect the environment and to minimize potential effects of the pipeline construction and maintenance. PennEast has based the specifications in the E&SCP on procedures successfully used in constructing, operating and maintaining transmission systems throughout the United States, and on guidelines and recommendations from the USACE, the U.S. Department of Agriculture, the Natural Resources Conservation Service (NRCS), and the FERC. This E&SCP meets all conditions outlined in the FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan (Plan)* (May 2013 Version) and *Wetland and Waterbody Construction and Mitigation Procedures (Procedures)* (May 2013 Version) except in areas where PennEast has requested a waiver from specific conditions as outlined in Resource Report 1 (see Appendix A).

The E&SCP is currently under modification to include guidelines and recommendations from applicable Pennsylvania and New Jersey county conservation districts and components of the PADEP's *Erosion and Sediment Control Program Manual* (March 2012) as well as the requirements of the New Jersey Department of Agriculture's *Standards for Soil Erosion and Sediment Control in New Jersey* (January, 2014).

5.1 Best Management Practices and Erosion & Sediment Control Devices for Construction Activities

As previously indicated, temporary impacts to disturbed surface locations along the pipeline ROW will be mitigated for via use of the Project-specific E&SCP (see Appendix C). This plan emphasizes the use of standard erosion control techniques designed to reduce potential short-term and long-term impacts on soil and water resources including but not limited to the following:

- The installation of temporary and permanent slope breakers;
- The use of permanent trench breakers;
- The installation of temporary sediment barriers (e.g., hay bales, siltation fence or compost filter socks);
- The use of temporary drainage swales and check dams;
- The use of temporary and permanent seeding as an erosion control cover;
- The distribution of straw mulch as a temporary erosion control cover;
- The use of erosion control matting along steep slopes and riparian corridors;
- The placement of equipment bridges and mats for the crossing of wetlands and waterbodies;
- The use of water as a dust suppressant:
- The installation of rock construction entrances to minimize sediment transport on to roadways;
- The segregation of topsoil in wetlands, agricultural areas, and residential lands;

- The revegetation of the disturbed ROW; and
- The adherence to the applicable timing restrictions to minimize impacts to sensitive aquatic and terrestrial resource areas.

5.2 Right-of-Way Restoration and Off-Site Mitigation Plans

Clean-up and restoration of Project ROW locations will be conducted in accordance with the procedures outlined in the E&SCP (Appendix C). Permanent impacts resulting from the Project to upland areas will be limited to the conversion of forested locations within the permanent ROW to successional field communities. There will be no permanent wetland loss from construction of the Project, as wetland disturbances will only include temporary disturbances or permanent conversion from PFO and/or PSS wetland to PEM. For temporarily disturbed wetlands, restoration and revegetation following completion of construction will be performed in place, in kind with the appropriate wetland plantings. In instances where permanent wetland cover type conversions of PFO or PSS wetlands to permanently maintained PEM wetlands, PennEast will comply with agency approved compensatory wetland mitigation plans that are currently under development for the Project.

5.3 Spill Prevention, Control, and Countermeasure Plan

PennEast has developed a Spill Prevention, Control, and Countermeasure (SPCC) Plan and Unanticipated Discovery of Contamination Plan (Appendix H) to prevent the release of hazardous materials as well as to specify the actions that will be taken should any spills occur during construction of the Project. The spill prevention and control methods listed in the SPCC Plan are based on approved spill control plans that PennEast has used successfully on past natural gas pipeline projects. This SPCC plan details the necessary spill response and prevention measures that all Project personnel will be subject to including contractor training, emergency notification procedures, equipment inspection protocols, refueling limitations and policies on the storage of hazardous materials. Additional details on the construction techniques and measures that will be employed are provided in the SPCC Plan located in Appendix H.

6.0 WATER QUALITY

As discussed in Resource Report 2, the Project prioritizes the avoidance and/or minimization of impacts to water resources. Temporary unavoidable impacts to water resources within the Delaware River Basin during construction activities include trench excavation through wetlands and waterbodies and the minimal fluctuations in local surface elevations and water tables that may occur during surface water withdrawals and trench dewatering activities. Impacts associated with these activities will be minimized through implementation of the erosion and sedimentation control BMPs that are provided in the E&SCP (see Appendix C) and adherence to the FERC *Plan* and *Procedures*.

PennEast will file and obtain the necessary permits and licenses relating to construction activities across surface waters as well as for the withdrawal and discharge of water supply volumes for the Project. A complete list of all required permits and approvals for the proposed Project can be found in Section 1.7-1 of Resource Report 1.

6.1 State Permit Requirements and Authorizations for Withdrawal and Discharge Activities

As previously indicated, permit authorizations specific to the withdrawal and discharge of water supply volumes independent of this DRBC Surface Water Withdrawal Permit include submission of a

Notice of Intent (NOI) for coverage under the Pennsylvania General Permit – 10 for Discharges from Hydrostatic Testing of Tanks and Pipelines (PAG-10) to the PADEP, a Clean Water Assurance Certification Form (General Permit NJ0132993) for the discharge of hydrostatic test water, and a potential submission of a Water Allocation Permit Application (BWA-001A) for surface water withdrawals.

PennEast will monitor site activities so that the discharges are in accordance with the discharge procedures identified for the approved PAG-10 Permit(s) in Pennsylvania.

As required for the PAG-10 Permit, water sampling will occur per discharge section during dewatering of the pipeline system. The parameters will be monitored and recorded during sampling events in accordance with the requirements of the PAG-10 Permit.

Similarly, discharge activities in New Jersey will be conducted under the procedures and requirements found in the Hydrostatic Test Water Discharge General Permit (NJ0132993). During dewatering of the pipeline system in New Jersey, PennEast will follow all permit requirements.

PennEast will coordinate with the NJDEP regarding the necessary monitoring parameters for the release of hydrostatic test waters.

The NJDEP Bureau of Water Allocations and Well Permitting regulates all major surface water diversions of freshwater and non-freshwater that may impact fresh water resources. Major diversions are defined as those capable of withdrawing 100,000 gallons per day or more and required a Water Allocation Permit (BWA-002). If applicable, PennEast will obtain the necessary authorizations for surface water withdrawals in New Jersey and ensure all activities are consistent with the requirements of the Water Allocation Permit (BWA-002).

The withdrawal BMPs and procedures described in Section 4.0 will be modified (if necessary) to ensure compliance with any applicable NJDEP permit conditions relative to the use of surface waters for construction activities.

6.2 Use of Chemicals or Additives for Hydrostatic Pressure Testing

No chemicals or additives will be used when conducting hydrostatic pressure testing activities.

6.3 Impacts to Benthic Communities

Impacts to benthic communities are anticipated to be limited to temporary disturbances associated within installation of the pipeline facilities as discussed in Section 2.5. Mitigation for the temporary site disturbance will occur through the use of PennEast's E&SCP (see Appendix C) which contains site-specific BMPs to minimize impacts during construction and specialized restoration measures to successfully restore waterbody bed, bank and riparian corridors to their preexisting site conditions to the fullest extent possible. BMPs specific to the protection of waterbodies include but are not limited to the following:

- Reducing ROW workspace widths at waterbody crossings to what is essential for safe installation of the Project;
- Maintaining a 10-foot vegetative strip parallel to waterbody crossings where feasible;
- Installation of agency approved sediment and erosion control devices around workspaces and parallel to waterbody banks to minimize potential transport of sediment into waterbodies;
- Utilizing bypass and flume crossing techniques to ensure no flow is present during trenching operations;

- Limiting actual instream trenching operations to the minimum dimensions necessary (typically eight- to ten-feet in width) to safely install the 36-inch diameter pipeline;
- Segregating the waterbody substrate from adjacent spoils during excavation activities;
- Installing permanent trench plugs at waterbody banks to prevent the flow of sediment along the ditch into the waterbody crossing;
- Completing waterbody crossings within 24 hours for minor waterbodies and within 48 hours for intermediate waterbodies;
- Completing backfill and restoration of workspace locations through utilization of native substrate, segregated during excavation activities or the use of clean gravel or native cobbles for the upper one-foot of trench backfill;
- Stabilization of disturbed adjacent areas through seeding, mulching and the installation of erosion control fabric perpendicular to the restored waterbody crossing;
- Ensuring waterbody contours and flow patterns are restored to pre-construction conditions and completing restoration of the waterbody bed and banks prior to returning natural stream flows; and
- Maintaining a minimum 100-foot buffer from waterbodies to refuel vehicles, store or transfer liquid hazardous materials, and field coat pipeline segments with concrete, unless otherwise approved by the EI and secondary containment is implemented.

Given the construction and restoration BMPs identified for the Project, disturbances to benthic communities are expected to be limited to the short term (24 to 48 hour) loss of natural waterbody flow conditions within isolated workspace areas and the temporary displacement of native substrate during installation of the pipeline until restoration procedures are complete. Based on the localized, temporary nature of construction at waterbody crossing locations, and the waterbody restoration measures that will be implemented for each crossing location, it is anticipated that benthic habitats will be properly restored, allowing the natural recolonization by benthic species found in the unaffected adjacent areas. Publications in support of natural benthic community recovery following construction activities have been included for review in Appendix I of this application.

6.4 Thermal Impacts associated with Construction Activities

Temporary thermal impacts resulting from construction of the Project will occur to waterbodies as a result of increased ground surface temperatures from the removal of vegetation and the reduction in thermal buffering due to clearing activities along waterbodies and flood plain corridors that intersect the ROW. To offset these impacts, PennEast will limit clearing at waterbody crossings such that riparian buffers and canopy cover over surface waters are maintained to the maximum extent practicable. In accordance with the FERC *Procedures*, PennEast will maintain at least 15 feet of undisturbed vegetation between the waterbody (and any adjacent wetland) and the construction ROW, except where maintaining this offset will result in greater environmental impact. PennEast has incorporated BMPs into the design of the Project that avoid direct discharges of stormwater runoff to surface waters, thus reducing the potential for increased waterbody temperatures due to a reduction in groundwater infiltration. Runoff discharges will be directed off the construction ROW across well vegetated areas, which will provide opportunity for increased infiltration and promote groundwater recharge, which both promote natural thermal buffering. Disturbed ROW locations will be restored and permanently revegetated shortly after installation of the pipeline facilities as described in the Project E&SCP (see Appendix C). Through revegetation of the ROW thermal impacts will be limited

to short-term occurrences associated with the construction phase of the Project, and therefore no long-term affects to surface water temperatures would occur.

Thermal impacts to surface water resources resulting from hydrostatic test water discharge activities are anticipated to be minor and limited to the slow infiltration of clean water to the requested receiving water sources via overland flow or groundwater infiltration. Given the volumes of water requested and the slow heating and cooling physical properties of water, significant temperature fluctuations in water supplies for hydrostatic testing operations are not anticipated between the withdrawal and discharge period. Water withdrawn as a local source will be immediately drained into the pipeline system or trucked offsite for immediate use in the pipeline or discharged into tanks for storage. As a result, exposure to solar radiation will be minimal and water contained within the pipeline system will be buried at a depth of three (3) to five (5) feet below grade, where ambient soil temperatures are below surface temperatures, thus insulating the water contained within the pipeline system. Additionally, PennEast will also avoid direct discharges to surface waters. As detailed in Section 4.2, all discharge events will involve the use of energy dissipation devices which will be situated in well vegetated upland areas and contained via the use of hay bale structures lined with erosion control fabric. Use of these devices will provide opportunity for increased infiltration and promote groundwater recharge, which both promote natural thermal buffering. Based on the information provided, thermal impacts resulting from installation of the proposed Project are anticipated to be localized, short-term and minor and will be mitigated for through implementation of the BMPs detailed herein along with full revegetation of the riparian corridors crossed by the Project ROW.

7.0 CONCLUSION

As detailed in Section 3.8 (Referral and Review) of the DRBC Compact: *No project having a substantial effect on the water resources of the basin shall hereafter be undertaken by any person, corporation or governmental authority unless it shall have been first submitted to and approved by the commission, subject to the provisions of Sections 3.3 and 3.5. The commission shall approve a project whenever it finds and determines that such project would not substantially impair or conflict with the comprehensive plan and may modify and approve as modified, or may disapprove any such project whenever it finds and determines that the project would substantially impair or conflict with such plan. The commission shall provide by regulation for the procedure of submission, review and consideration of projects, and for its determinations pursuant to this section. Any determination of the commission hereunder shall be subject to judicial review in any court of competent jurisdiction.*

As proposed, the Project will have no long-term significant detrimental effects to aquatic and terrestrial habitats temporarily impacted by construction of the Project. The realistic, reasonable extent of future impacts resulting from this Project would predominantly focus on facility operation and maintenance activities. Such activities would be conducted in a manner similar to the construction period (e.g., avoiding and minimizing disturbances and implementing timing restrictions) and would thereby limit any future temporary water resource impacts. As a result, the Project would not substantially impair or conflict with the DRBC's Comprehensive Plan and therefore meets the standards for issuance of a permit.

Impacts will be avoided and minimized during construction by adherence to PennEast's BMPs contained within the E&SCP (see Attachment C). PennEast will rely on the E&SCP for the crossing of all waterbodies, the withdrawal and discharge of surface waters and the restoration and revegetation of all Project areas following installation of the pipeline.

The BMPs relative to the withdrawal and discharge of water supplies contained within this application will minimize disturbances to surface water sources and allow for the dewatering of the pipeline with minimal affects to the requested receiving waters. The proposed restoration of wetland areas and

riparian corridors along waterbodies will help to amend impacts to water quality, which will help ensure that impacts to sensitive surface waters are minimized. There will be no net loss of wetland area but a conversion from one type to another (e.g. forested or scrub shrub to emergent) will occur. Appropriate mitigation will be implemented in accordance with USACE, PADEP and NJDEP specifications through the permit process. Impacts to forested locations have been reduced to the maximum extent practicable. Trees and other woody vegetation will be allowed to re-vegetate naturally within the temporary pipeline construction ROW and extra workspaces. Where the pipeline crosses nature preserves, state parkland or state gamelands in Pennsylvania; and Green Acres properties in New Jersey, PennEast will actively replant areas in order to replace mature trees and shrubs within temporary workspaces impacted by construction.

PennEast will also implement an approved Post-Construction Stormwater Management Plan, and a SPCC Plan and Unanticipated Discovery of Contamination Plan (Appendix H) throughout the Project that will further minimize risks from spills or leaks, erosion and sedimentation, and stormwater runoff from construction areas with exposed soils.

8.0 REFERENCES

- Cowardin, L.M., Charter, V., Golet, F.C., LaRoe, E.T., 1979, Classification of Wetlands And Deepwater Habitats of the United States, Report No. FWS/OBL-97/31, U. S. Department of the Interior, Fish and Wildlife Service, Washington District of Columbia.
- Delaware River Basin Commission (DRBC). Delaware River Basin Compact. U.S. Pub. L. 87-328. 107 Stat. 688. 27 September 1961. <http://www.nj.gov/drbc/library/documents/compact.pdf>. Accessed January 2, 2016.
- DRBC. Administrative Manual – Part III Water Quality Regulations. 18 CFR Part 410.1. December 4, 2013. <http://www.nj.gov/drbc/library/documents/WQregs.pdf>. Accessed January 2, 2016.
- DRBC Administrative Manual – Part III Basin Regulations and Flood Plain Regulations Adopted November 10, 1976, Effective January 1, 1977. http://www.nj.gov/drbc/library/documents/floodplain_regs.pdf. Accessed January 2, 2016.
- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.
- Federal Energy Regulatory Commission (FERC). 2013. Office of Energy Projects. Wetland and Waterbody Construction and Mitigation Procedures. May 2013. <http://www.ferc.gov/industries/gas/enviro/procedures.pdf>. Accessed July 2, 2015.
- Federal Energy Regulatory Commission (FERC). 2013. Office of Energy Projects. Upland Erosion Control, Revegetation, and Maintenance Plan. May 2013. <http://www.ferc.gov/industries/gas/enviro/procedures.pdf>. Accessed July 2, 2015.
- Federal Emergency Management Agency (FEMA). 2015. Floodway. <http://www.fema.gov/floodplain-management/floodway>. Accessed on July 2, 2015.
- New Jersey Administrative Code (N.J.A.C.). 2009. NJAC 7:13-10.2. The Flood Hazard Area Control Act, Riparian Zones. <http://www.nj.gov/dep/landuse/lawsrules/fhacar10.html>. Accessed February 4, 2015.
- New Jersey Department of Agriculture - State Soil Conservation Committee. The Standards for Soil Erosion and Sediment Control in New Jersey. January 2014. <http://www.nj.gov/agriculture/divisions/anr/pdf/2014NJSoilErosionControlStandardsComplete.pdf>. Accessed January 2, 2016.
- New Jersey Department of Environmental Protection (NJDEP). 1986. NJDEP Wetlands of Hunterdon County, New Jersey, 1986. New Jersey Department of Environmental Protection (NJDEP), Office of Information Resources Management (OIRM), Bureau of Geographic Information and Analysis (BGIA). Trenton, NJ. Accessed at <http://www.state.nj.us/dep/gis/digidownload/zips/wet/hunwet.zip>.
- NJDEP. 1986. NJDEP Wetlands of Mercer County, New Jersey, 1986. New Jersey Department of Environmental Protection (NJDEP), Office of Information Resources Management (OIRM), Bureau of Geographic Information and Analysis (BGIA). Trenton, NJ. Accessed at <http://www.state.nj.us/dep/gis/digidownload/zips/wet/merwet.zip>.
- NJDEP. 2009. Freshwater Wetlands Protection Act Rules N.J.A.C. 7:7A, Surface Water Quality Standards N.J.A.C. 7:9B, and NJDEP Flood Hazard Area Control Act Rules N.J.A.C. 7:13.
- Pennsylvania Department of Environmental Protection (PADEP). 2000. Erosion and Sediment Pollution Control Program Manual. Commonwealth of Pennsylvania, PA DEP No. 363-2134-008 (January 1996, as amended), Harrisburg, Pennsylvania.

PADEP. July 16, 2012. Email Letter from B. Mackowski to J. Coffman (URS).

Stuckey, H, Marla and Roland, A, Mark, 2011, Selected Streamflow Statistics for Streamgage Locations in and Near Pennsylvania, U. S. Department of the Interior, U.S. Geological Survey Service, Reston, Virginia.

U.S. Fish and Wildlife Service (USFWS). 1989. Federal Manual for Identifying and Delineating Jurisdictional Wetlands. U.S. Department of the Interior, Fish and Wildlife Service/Interagency Cooperative Publication, Washington, D.C. Accessed at <http://digitalmedia.fws.gov/cdm/ref/collection/document/id/1341>.